This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

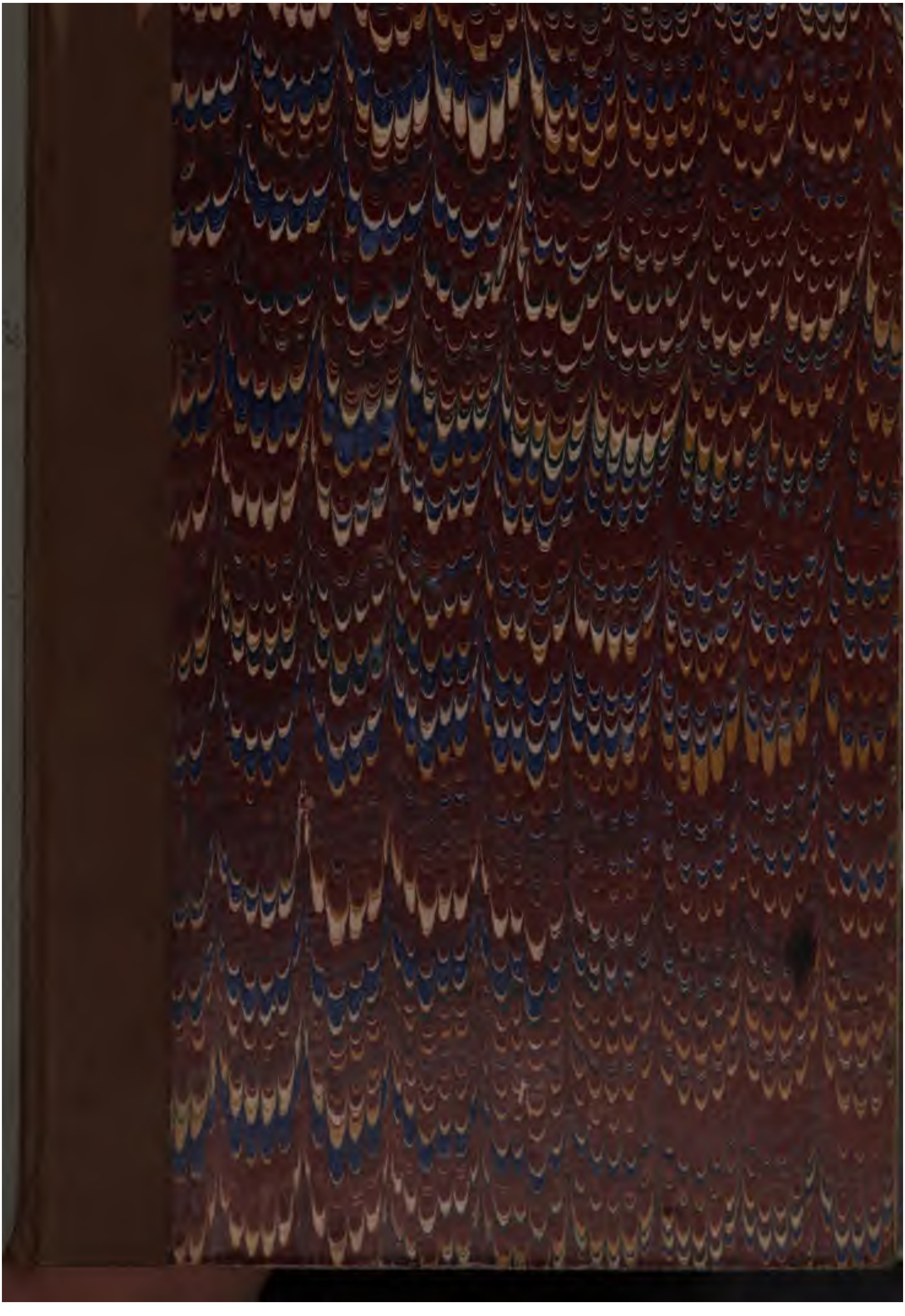
+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`



fc. 53

600040441J

pc. 53

600040441J

PATENTS FOR INVENTIONS.

ABRIDGMENTS

OF

Specifications

RELATING TO

FARRIERY;

INCLUDING THE MEDICAL AND SURGICAL TREATMENT OF ANIMALS.

A.D. 1719–1866.

PRINTED BY ORDER OF THE COMMISSIONERS OF PATENTS.

LIOTHECA·BODLEIAN
20

LONDON:
PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY.
PUBLISHED AT THE
OFFICE OF THE COMMISSIONERS OF PATENTS FOR INVENTIONS,
25, SOUTHAMPTON BUILDINGS, HOLBORN.

1872.

176 i. 20.

PREFACE.

The Indexes to Patents are now so numerous and costly as to render their purchase inconvenient to a large number of inventors and others, to whom they have become indispensable.

To obviate this difficulty, short abstracts or abridgments of the Specifications of Patents under each head of invention have been prepared for publication separately, and so arranged as to form at once a Chronological, Alphabetical, Subject-matter, and Reference Index to the class to which they relate. As these publications do not supersede the necessity for consulting the Specifications, the prices at which the printed copies of the latter are sold have been added.

The number of Specifications from the earliest period to the end of the year 1866 amounts to 59,222. A large proportion of the Specifications enrolled under the old law, previous to 1852, embrace several distinct inventions, and many of those filed under the new law of 1852 indicate various applications of the single invention to which the Patent is limited. Considering, therefore, the large number of inventions and applications of inventions to be separately dealt with, it cannot be doubted that several properly belonging to the group which forms the subject of this volume have been overlooked. In the progress of the whole work such omissions will, from time to time, become apparent and be supplied in second or supplemental editions.

This volume contains Abridgments of Specifications to the end of the year 1866. From that date the Abridgments will be found in chronological order in the "Chronological and Descriptive Index" (*see* List of Works at the end of this book). It is intended, however, to publish these Abridgments in classes as soon as the Abridgments of all the Specifications from the earliest period to the end of 1866 have appeared in a classified form. Until that takes place, the reader (by the aid of the Subject-matter Index for each year) can continue his examination of the Abridgments relating to the subject of his search in the Chronological and Descriptive Index.

This series includes the inventions relating to farriery, veterinary medicine, and the medical and surgical treatment of domesticated animals. Those connected with the manufacture or improvement of horse-shoes and horse-shoe nails form the staple of the book; but every surgical or medical appliance intended exclusively or specially for animals has been admitted. Improvements in harness, stable fittings, or the grooming of horses, have not been included; they will be found in the series entitled "Saddlery, Harness, " Stable Fittings, &c." Medicated food is included; but inventions relating to the breeding, nutrition, or care of farm animals must be looked for in a future series of Abridgments.

The Abridgments marked thus (* *) in the following pages were prepared for another series or class, and have been transferred therefrom to this volume.

B. WOODCROFT.

January, 1872.

INDEX OF NAMES.

[The names printed in *Italic* are those of the persons by whom the inventions have been communicated to the Applicants for Letters Patent.]

Page
Adams, H. W..........54
Anderson, L..........110
Anelli, J..........49
Austen, J..........76

Bacon, J. B..........56
Bagshaw, J..........52
Baily, J..........35
Baker, W..........18
Barbezières, S. N., De la
Haye de..........88
Barker, G. J..........69
——, T..........69
Bartholomew, G..........38, 58, 63, 65, 72, 100
Bastien, H. E..........106, 109
Batchelder, H. J..........126
Batt, H..........101, 104
Belford, A. E. L..........36
Bennie, J..........80
Berry, M..........18
Biers, J..........91
Bigoy, F..........109
Binks, C..........51
Black, C..........27
Blackwell, S..........94
Bobœuf, P. A. F..........117
Bonneville, H. A..........106
Bousfield, G. T..........44, 77, 83
Brainerd, J..........93
Brockedon, W..........31
Brooman, R. A...60, 66, 80, 109
Brundage, E. L..........33
Burden, H..........48
Burden, H..........69
Burridge, W..........93

Page
Carr, A. T..........84
Castets, A..........35
Caunter, H..........105
Charlier, P..........108
Charlton, H..........85
Clarendon, T..........23
Clark, B..........6
——, W..........104, 108, 122
Clarke, C..........45
Clatworthy, J..........7
——, T..........7
Clément, P. E..........89
Coates G..........4
Coats, G..........46
Coggshall, H..........68
Coleman, E..........4, 7, 9
Combe, J..........64
Cook, B..........43
Coppard, J..........93, 103
Courvoisier, B..........109
Cutler, E. A..........66
Cutler, E. A..........83

Damoiseau, A. A. R..........81
Davies, G..........82, 83, 96, 111
Davis, J..........120
Dawes, W..........70
De Gournay, J. A. S..........18
De Keyser, P..........54
De la Frenaye, H. C..........104
De la Haye de Barbezières, S. N.
88
Desplas, J. B. H..........132
Dickinson, J. C..........128
——, R..........11
Dorr, E. M..........25

Page
Douglas, J. R. A. 77
Dowler, G. 72
Ducis, M. A. 109
Dudley, T. B. W. 10

Ede, E. 85
Edwards, W. 79
Ellison, E. 120

Falatieu, J. J. 125
Farmer, G. J. 72
Febvre, L. le 60
Fleet, T. 3
Fontaine Moreau, P. A. le Comte de 47, 109
Fowler, J. 105
Francis, H. 33
Frenaye, H. C. de la 104

Gamgee, J. 119
Gardner, H. 40
Gedge, W. E. 125, 128
Gibbs, S. 66
Goldfinch, H. 10
Goodenough, R. A. 77
Gournay, J. A. S. de 18
Gowing, T. W. 63
Green, J. 102

Haines, F. 46
Hall, J. 25
Harris, J. 10, 114
——, J. P. 52
——, T. 19, 53
Haseltine, G. 93
Haye de Barbezières, S. N. de la 88
Hayes, P. 95
Hayward, C. J. 113
Hibbert, W. 114, 116
Hill, L. 24
——, T. 42
Hobson, R. 30
Hodges, R. E. 31
Hodgson, J. T. 12
Home, J. 22
Hope, J. G. 121
Huckvale, T. 32
Huggett, J. 117

Page
Ince, T. H. 110

Jaques, G. 71
Jarman, J. 41
Jevons, T. 17
Johnson, J. 66
Johnson, J. H. 41, 43
Johnston, T. 1
Jones, P. R. 55

Keene, C. 27
Kendall, J. B. 86
Keyser, P. de 54

Lake, W. R. 129
Lambert, W. 76
Larnaudes, V. 118
Law, J. 126
Le Febvre, L. 60
Lewis, J. 8
Lewis, W. W. 64
Lillie, Sir J. S. 32
Louvrier, C. A. 82, 96
Loysel, E. 39

Major, J. 33, 35
Mallet, J. F. 108
Manton, J. 8
Marsden, R. 76
Mason, B. A. 78
Massiaux, J. T. 79
Matson, C. E. 57
Mavor, F. J. 100
Maynard, E. 53
Mennons, M. A. F. 91
Middleton, S. 98
Miller, J. 25
Moffat, W. 80
Moorcroft, W. 3, 5
Moss, D. T. 90
Mulet, L. A. 101

Napier, J. 130
Neville, J. 22
Newton, A. V. 59, 61, 64, 71, 78, 105
——, W. E. 35, 49, 54, 56, 95, 107, 112, 130

Page
Norrington, F..................95
Norris, J..................68, 71
Norton, C..................93
Nye, J..................16

Owen, L. D..................62

Page, T..................96, 99
Parkes, F..................103
Parry, W..................29
Payne, G..................92
Peillard, C. J. B...................128
Percivall, W..................13
Perkins, C. H...................66
Peschell, H. F. J...................104
Pidding, W..................34, 40, 45, 102
Playfair, W..................2
Polsey, A. M...................129
Poole, M..................30
Powell, C..................27
Price, J..................79
Pringle, H..................85
Purden, F..................7
Putnam, S. S..................90

Quinard, A..................87

Radley, W..................1
Reay, W. W..................52
Reeve, W. G..................36
Reynolds, J..................68
———, O..................20
Rodway, H. B..................21
Rotch, B..................9, 14
Russell, J..................79

Sainty, J..................113, 125
Savage, G..................38
Scott, U..................37, 55
Seeley, A..................105
Short, S..................48
Sibut, P. M...................111
Silver, S. W..................85
Smith, J..................62

Page
Snell, W..................75
Sorby, J..................7
Spencer, J..................5
Springall, J..................18
Standen, B..................86
Stocker, A..................15
———, A. R..................81, 88, 99
———, A. S..................60, 67, 74, 75, 81, 88
———, W. S..................15
Swindell, C. E..................79
Symmons, J..................111

Taylor, J. G..................37
———, T. R..................83
Thiry, P..................80
Thomas, G..................63
Threlfall, J..................76
Till, T..................68, 71, 74
Tolhausen, F..................89
Tomlinson, C. K..................113
Truman, E. T..................73
Turnbull, J..................21

Vaux, T..................20, 29
Vavasor, J..................1
Vazie, R..................131
Verzoli, V..................107
Viel, L. C..................111

Wachter, L. R..................91
Watney, A..................28
Watrin, A. A..................112
Watson, T..................2
Weiss, J..................13
Wells, W..................92, 94
Wheeler, E..................97
Whittemore, A..................75
Wilkinson, A. S...................122
Wilkinson, W..................8
Williams, F. S..................97
Withers, H..................78
Woodin, D..................26
Woodman, W..................12

INTRODUCTION.

No great antiquity can be boasted for the science of Veterinary Medicine. Ancient nations seem to have paid little or no attention to the medical treatment of their domestic animals. Valuable as the horse was, they necessarily expended great care upon the preservation of his health, but we cannot discover that they used any remedies to cure an animal once diseased. The well known work of Xenophon (Ἱππιχή, Treatise on Horses) contains many precepts that might with advantage be studied by horse owners of our own time, but he gives no directions for the care or treatment of the horse during sickness. Indeed when we remember how low was the condition of medical science, and how rude the medical treatment of men, we can hardly wonder if the *vis medicatrix naturæ* was generally the only healing agent for the lower animals. Yet we have evidence that some slight attention at least was paid to the study of the diseases of animals. Hippocrates wrote a treatise on equine disorders, Columella (early part of 1st century) and Vegetius (end of 4th century) both wrote on the same subject.

But more ancient records relating to the matter seem entirely wanting, and even the above, as might be expected, show extreme ignorance. There was indeed one ancient people who in this as in most other sciences were far advanced before contemporary nations. In searching into the early history of any art, we are almost certain to find very ancient record of it among the Chinese. So it was with veterinary medicine. The late Professor Sewell, in one of his addresses to the Royal Veterinary College,* said that he had been shown by Professor Huzard, in Paris, a Chinese work on the subject with coloured plates. The date of it was uncertain, but it was probably not less that 5,000 years old.

During mediæval times the art was in an equally low state, and entirely abandoned to farriers. The practice of medicine as applied to human subjects was rough and barbarous enough, and that by which horses were treated was even more cruel. Many very barbarous operations were recommended in old French works. At length the assistance rendered by the dissection of animals to the progress of medicine in general, directed the attention of some medical men to the study of animal diseases, and of course the horse, as the most valuable, received most notice. Amongst the early veterinary enquirers of note were Ruelli, Solleysel, and Lafosse, whose works are mentioned in the list appended to this book; contemporary with the last-named was a Spanish author who wrote on glanders, a disease said to have been brought by Columbus from America. In England, Snape, Gibson, and Bartlett (in or after the times of Charles II.), were the first names of note. But it was not until the middle of the eighteenth century that any great improvement was effected. France then took the lead. A farm near Lyons was converted into a school in 1761, and Bourgelat appointed professor. Three years after this, in 1764, a larger school was opened at Alfort, near Paris, and since then another at Toulouse. Other countries followed the example. In 1792 the London Veterinary College was established, chiefly through the exertions of the members of an agricultural society at Odiham, in Hampshire. The college was supported by the contributions of subscribers, who were allowed to have horses treated gratuitously. A French surgeon named St. Bel was appointed the first professor, but he died a year after his appointment. Moorcroft and Coleman followed as joint professors, but Moorcroft resigned, and left Coleman to enjoy the post alone. This he did for 50 years, when he died, and was succeeded by Sewell. The last-named died in 1853, and Spooner was made professor. His recent death last year left the office vacant. The college was incorporated by Royal Charter in 1836.

---

* Nov. 10, 1845. See *Veterinarian Record* for that year.

As to the history of horse-shoeing, this, as well as that of veterinary medicine, has already been so thoroughly worked out that it seems hardly worth while to attempt more than the briefest *résumé* in the present work. So numerous are the books treating of the subject that even to procure any list of them has proved a labour of time and trouble; and that appended to the end of the volume has been compiled rather with the view of affording aid to those seeking information than with any hope of obtaining a complete bibliography of Farriery.

Amongst the many works on the subject, the exhaustive treatise of Mr. Fleming * takes a very high place. This writer has availed himself of every possible source of information, and has, in fact, left little for any of his successors to do. His extensive researches, both literary and antiquarian, have enabled him to take a view of the history of the art which will probably be admitted as the correct one for some time to come. From his book, consequently, most of the information in the following sketch is borrowed, and to the book itself readers must be referred for further instruction, as the latest and ablest work on the subject.

Going back to the most ancient known records of civilisation, the monuments of Egypt and Assyria, we are unable to discover any indication of the use of a protection for the horse's foot. Considering the number of horses delineated in the Egyptian paintings and the Assyrian sculptures, and the minuteness of detail that especially characterises the artists of these ancient monuments, it is impossible to suppose that any horse-shoe was in use without its being represented, not only occasionally, but frequently. No such representation has yet been found, and we may consequently conclude that horse-shoes were not known to these ancient nations.

Similar researches amongst Greek and Roman antiquities go to show that horse-shoes proper were unknown to the classical peoples. Horse-sandals of various sorts were used as a temporary protection for the foot, but the plan of nailing a metal plate on the hoof appears not to have been used at all. Mr. Fleming is of opinion, and the arguments he brings forward seem nearly, if not quite, conclusive, that the inventors of horse-shoes are to be looked for amongst the Teutonic or Celtic nations of the north. The Gauls shod their horses, so did the ancient Britons, so did the Scandinavians. It even has been suggested that a principal part of the Druids' office was connected with smiths' and farriers' work.

In mediæval times the position of the mareschal or farrier became a very important one. During the age of chivalry there was nothing degrading in noblemen shoeing their own horses, and the mareschal was held to be on a footing of equality with

---

* *Horse-shoes and Horse-shoeing; Their History, Uses, and Abuses.* By George Fleming, F.R.G.S., F.A.S., &c., &c. London, 1869.

the chamberlain, falconer, and other household officers of a court. Horse-shoeing was then as universal as now. Pictures of knights and cavaliers always represent the horses as shod, and allusions to the practice of shoeing frequently occur in middle-age writers.

Strangely enough, very little difference in shape is discernible between the most ancient shoes and the most modern. Of course some very old shoes are of the roughest workmanship, but as soon as the art of working in iron was brought to a state of comparative perfection, we see shoes exactly resembling those in present use. Numerous as have been the inventions for improved shoes, none of them have been found sufficiently successful to obtain general favour. Over and over again the same inventions have been brought out, tried, and cast aside, to reappear as new a few years later on, and we still use much the same shoes as those with which William the Conqueror's horses were shod at Hastings. Numerous new plans have also been tried for attaching the shoe to the hoof, many of which will be found in the succeeding Abridgments. Still none of them have ever been widely adopted. Nor is it at all certain that shoes can be made by machinery. No opinion can be expressed here upon the comparative merits of hand or machine-made shoes, but it may be mentioned that the best judges are yet at variance upon the question, the majority holding the opinion that no good and sound shoe has ever yet been made by a machine.

FARRIERY;

INCLUDING THE MEDICAL AND SURGICAL TREATMENT OF ANIMALS.

A.D. 1719, September 7.—N° 424.

VAVASOR, James.—"A new method of ticketting, marking, " or staining of horses, as will secure them for the future from " being stolne."

[No Specification enrolled. Letters Patent printed, price 4*d.*]

A.D. 1769, November 16.—N° 941. (* *)

RADLEY, William.—"An entirely new sort of purging and " diuretic balls for the cure of several diseases incident to horses." The substances used in the preparation of the medicine are juniper berries, tincture of aloes, salt of tartar, carraway seeds, jalap, parsley seeds, amber, nitre, ginger, hartshorn thoroughly calcined, and Venice turpentine, the whole by a chemical process being made into balls.

[Printed, 4*d.* No Drawings.]

A.D. 1774, January 18.—N° 1060.

JOHNSTON, Thomas.—"A durable preparation for staining " horses and other animals, by means whereof horses of the most " different colours may be made to match exactly; the cattle to " which it is applied will be thereby secured from the trouble- " some attacks of flies and other insects, and may be privately " marked in such a manner as no thief can efface without " disfiguring the horse or other animal marked with it."

This durable preparation for marking animals "consists of " double and single aquæfortis, gold sollution, ditto silver, ditto

" copper; the above ingredients are not compound, but to be " applyed in the following manner :—A brush made of camil's " hair or cane to be first dipped in the aquæfortis, and stained " on the beast or animal, and the gold or silver, or copper sol- " lution afterward stained on, to form a shade to the liking of " the stainer, either black, brown, purple, or chesnut, or other " colour he thinks proper."

[Printed, 4*d*. No Drawings.]

A.D. 1783, May 24.—Nº 1373.

PLAYFAIR, William.—" Making bars for sash windows of " copper, iron, or any mixed metal containing copper; also metal " ornaments & mouldings for grates & fenders, & ornamented " metal borders for tea waiters, trays, and bottle stands; likewise " horse-shoes and curtain rods of iron, which will be of great " public utility."

The horse-shoes are made in the following manner :—A bar of iron of suitable size is passed through rollers, one of which is grooved so as to form the channel or channels of the horse-shoe, wherein the heads of the nails are lodged. This bar is then bent round a fixed body on a plate made of cast iron, so shaped as to give the form of a horse-shoe to the bar of iron bent round it. One end of the bar is held close to the side of the fixed body by a pair of tongs, or by a fixed point, fulcrum, or other contrivance, The other end is also grasped by a pair of tongs and bent round by hand or other power, or the bar may be bent round the fixed body by some body made to move along the bar with sufficient force to press it close to the fixed body.

[Printed, 8*d*. Drawing. See Repertory of Arts, vol. 8, p. 158.]

A.D. 1783, September 12.—Nº 1387. (* *)

WATSON, Thomas.—" A purging paste for horses and dogs, " being a primary medicine for all diseases incident to each and " calculated for all ages and sizes of both the animals. The root of jalap cut thin and pearl ashes are infused in water and allowed to stand a considerable time. The mixture is afterwards slowly boiled for many hours, until it is very greatly reduced in quantity. After being strained, salt of tartar, castor oil, and Barbadoes aloes are added to it, and it is again boiled until it acquires the consistency proper to be made into a paste. The proportions of the ingredients used are given.

[Printed, 4*d*. No Drawings.]

A.D. 1794, October 1.—N° 2014. (* *)

FLEET, THOMAS.—" Medicine for preventing the rot in sheep, " and check the further progress of the said disease in those " sheep already infected with it, in such a degree as to render " them capable of being fatted on the herbage of the same land " which produced or occasioned such disease." The ingredients which enter into the preparation of the medicine are turpentine, armenian bole, turmeric, quicksilver, brimstone, salt, opium, alkanet root, bark, antimony, camphor, and distilled water.

[Printed 4*d*. No Drawings. See Repertory of Arts, vol. 2, p. 305; Rolls Chapel Reports, 6th Report, p. 189.]

A.D. 1796, April 16.—N° 2104.

MOORCROFT, WILLIAM.—" An improved and expedititious " method of making and manufacturing horse-shoes, and other " articles formed of metals."

The bars of iron or steel, from which the shoes are to be made, are heated red hot, as in the process of rolling iron, and then are run between a pair of grooved rolls turned by a horse mill. " The " grooves in these rolls are various, according to the surfaces of " the shoes intended to be made, and form the groove and im- " pression for the heads of the nails, and regulate the thickness " of the shoes, or simply regulate the thickness without making " the groove or impressions for the nails." After being rolled, the bars are cut into suitable lengths, and these are then bent into the proper shape by hammer and anvil. When the shoes have been turned, they are again made red hot and struck between dies fixed in a fly press, such as is used in coining money. " These " dies are engraved and formed in such a manner as to confirm " to the shoe the proper thicknesses in the usual parts, to form " the groove and impressions for the nails when not given by " rolling," or the groove only. The rolls and dies are cut with projecting parts adapted to give impressions for the nails or groove, or they may be struck plain. The dies for these shoes are formed to correspond with those parts of a horse's foot to which shoes are usually fixed; and the shoes struck by them are more perfect in their shape, afford a better and truer support to the foot, and prevent many diseases produced by the manner of forming horse-shoes now in use.

[Printed, 4*d*. No Drawings. See Repertory of Arts, vol. 6, p. 157.]

A.D. 1797, January 31.—N° 2161. (* *)

COATES, George.—This invention relates to machinery for making horse-shoes, nails, brads, and other articles of iron and other metal.

The metal pieces used for forming horse shoes are first cut into suitable lengths; they are then (in a heated state) placed separately across the head of a mould or series of moulds, which severally in form represent the inside of a horse shoe. By the action of the machine the moulds are advanced between two rollers, while two thin small rollers on vertical centres operate laterally upon the metal; these rollers are separately mounted on converging slides, and as the moulds advance, they close upon the sides and press the metal to the form of the mould, the heel of the shoe being turned up by a part of the apparatus. The shoe is then placed on another mould, which, when passed through the machine, produces the fullering or grooving, and also the holes for the nails.

The machine, by a variety of shearing and other suitable apparatus and appliances fully described, is rendered capable of producing cut brads, tacks, ruffs for use in boat building, thimbles for ropes, staples, and other similar articles.

[Printed, 8*d*. Drawing.]

A.D. 1800, February 1.— N° 2370.

COLEMAN, Edward.—" An artificial frog, which being applied " to the natural frog of horses' feet, will effectually prevent " contracted hoofs, thrushes, and canker."

These diseases arise from the want of due pressure to the frog, and as the frogs of horses, from ordinary shoeing, are generally raised much above the heels of the shoe, so as to receive no pressure in the stable, this artificial frog is adapted to the hoofs of all horses, to cover and give any degree of pressure to the natural frog. It may be made of iron, horn, wood, or leather, iron being preferred. To fix and remove the artificial frog, and prevent its moving forward, the toe of the iron frog extends under the toe of the shoe, and to prevent backward or lateral motion a steel spring is fitted into an irregular groove, and fixed under the heels of the shoe. To fix it more firmly a strap is passed through a hole in the heels of the frog and buckled round the hoof. "Its chief " use is where the frog is raised above the shoe, when the heat " of the stable operates powerfully to induce contraction, that " standing on the artificial frog is more wanted to give such a " degree of pressure so as to preserve the natural frog in health " and consequently free from contraction, thrushes, and cancer."

[Printed, 4*d*. No Drawings. See Repertory of Arts, vol. 12, p. 383; Rolls Chapel Reports, 6th Report, p. 196.]

A.D. 1800, May 3.—N° 2398.

MOORCROFT, William.—" A new, improved, and still more " expeditious mode, by the application of machinery to my " former mode, of making and working horse-shoes."

Shears for cutting iron into bars of suitable length are worked by snail wheels. A punching frame is formed by a number of levers each carrying a punch. After the bar has been stamped and grooved as required, it is placed in the bending frame. A stop, the shape of the inside of a shoe, projects from a frame, and the bar after being heated is pressed against this by rollers. The punching frame only partially pierces the shoe, the holes being afterwards completed by a single punch. The shoe is finished by being stamped between dies in an engine. The lower die is smeared with soap and water, and the effect of this is " the blow- " ing up the shoe to a short height by their elastic expansion the " moment after the stroke." Thus the shoe is more easily detached.

[Printed, 1*s*. Drawing.]

A.D. 1801, June 20.—N° 2517. (* *)

SPENCER, John.—This invention relates to the manufacture of horse-shoe nails, which by suitable dies are stamped from plates having transverse ridges, raised during the rolling process at regular intervals on one surface, corresponding to longitudinal grooves sunk along the surface of one of the rollers of the rolling machine. Intermediately between the ridges, the plates thus produced are afterwards transversely cut into short lengths, each corresponding to the length of two nails, the ridge being left equidistant from each side. The punches or dies employed in the punching press cut two nails at a time, an enlargement at the mid-length of the die, (which tapers towards each end to form the points of the nails,) falling directly across the ridge. The piece cut represents two nails joined head to head; these are afterwards separated by apparatus suitable for the purpose.

Instead of employing punches to produce two nails at a time single punches producing one nail may be used, and rollers may be employed for "the purpose of making impressions on iron or " other metal."

[Printed, 6*d*. Drawing. See Repertory of Arts, vol. 15, p. 316; Rolls Chapel Reports, 6th Report, p. 200.]

A.D. 1806, March 25.—N° 2923.

CLARK, Bracy.—"Certain improvements upon horse-shoes."

The improved shoe is made in two distinct parts, which may be easily separated; namely, a shoe of elastic steel nicely fitted to the figure and turnings of the foot, with side and front clasps, or bands, by which it is held firmly to the foot. To this another shoe, called the "wearing shoe," is attached, which can be separated from it at pleasure. The "wearing shoe" or "under shoe" which comes in contact with the ground, is made of iron or steel in the ordinary form of the horse shoe; and as it is fastened by screws, it may be renewed at pleasure. The "fitted shoe" may be made of steel preferably, iron case hardened, silver made elastic, or plated steel or iron. This shoe is held to the hoof by stays or cliffs, extending round the foot, which prevent it from slipping laterally, or in front made with a "slit or groove." These clips are part of the shoe itself, or are fastened to it. They do not prevent the foot slipping out backwards, and "as the heels " are elastic, tender, and sensible, no apparatus of the above kind " can be used to prevent" the slipping in this direction; but it may be prevented "by a bolt or bolts, or pin or screw passing " through or near the front or side clips into the hoof, and which " are moveable with the growth of the hoof, descending along " with it," or by points passing through the under side of the shoe into the hoof; or bands of steel or other metal may be constructed to carry these points, bolts, screws, plates, or hooks. Holes are made in the hoof for the reception of the bolts or points.

A screw or toothed rack carries and regulates the raising or lowering of the points. The clips may also be placed on a single shoe and fastened to the hoof by numerous teeth.

[Printed, 4*d*. No Drawings. See Repertory of Arts, vol. 9 (*second series*), p. 161.]

A.D. 1808, April 30.—N° 3128.

COLEMAN, Edward.—" Certain improvements in the con-" struction and application of a horse-shoe, which will com-" pletely prevent several diseases to which the feet of horses are " subject, more especially that very general disease called con-" traction of the hoof; and is also particularly adapted for flat " or convex feet, for horses of the cavalry, and for hunting, and " for all other purposes where the loss of a shoe is productive of " great inconvenience."

The inner and posterior part of both heels of the shoe are turned up so as to touch the inner and posterior part of both bars, by which means the heels of the hoof cannot contract, or the shoe have any lateral motion. The turn up should be sufficiently long to embrace the heel of the bar, and not touch the bottom of the cavity between the bar and frog; a bar shoe may have a similar projection, to press against the heels of the bars.

[Printed, 4*d*. No Drawings. See Repertory of Arts, vol. 13 (*second series*), p. 304.]

A.D. 1809, March 1.—N° 3213.

CLATWORTHY, Thomas, and CLATWORTHY, John.—" Shears on an improved construction for shearing sheep, appli-" cable to other purposes."

The peculiarity of the shears described is that they are made with an inward bend in the bow, so that the bow is double. The manner in which the bow is bent during manufacture is described.

[Printed, 6*d*. Drawing. See Repertory of Arts, vol. 15 (*second series*), p. 16; Rolls Chapel Reports, 7th Report, p. 203.]

A.D. 1811, December 19.—N° 3513.

SORBY, John, the younger.—"A method of making sheep or " wool shears, glovers' shears, and horse shears, upon a new and " improved construction."

The novelty consists in attaching an additional small spring inside the bow of the shears. The spring may be of various forms.

[Printed, 6*d*. Drawing.]

A.D. 1812, February 27.—N° 3542. (* *)

PURDEN, Francis.—" An improved horse boot, for the pre-" servation of sound, and the restoration of contracted hoofs."

To keep the hoofs of horses moist when standing in stables on dry litter, the patentee has invented a boot composed of two pieces of leather sewed together, one piece forming the sole. The other piece is vandyked at top to allow of its being drawn tight to the hoof by means of a strap and buckle. Both pieces are lined with sponge.

[Printed, 6*d*. Drawing. See Rolls Chapel Reports, 8th Report, p. 91.]

A.D. 1812, October 31.—N° 3605.

LEWIS, John.—"Certain improvements on horse-shoes, and in "shoeing horses."

"My method," says the patentee, "of making horse-shoes" "is to make holes or notches in the external or convex edge of "the shoe, or near enough to the edge to admit of nails being "driven into the hoof properly; and also to admit of the heads "of the nails or other fastenings being moved or driven out-"wards in the direction of the radius of the shoes' curvature "without extracting the nails."

[Printed, 4*d*. No Drawings. See Rolls Chapel Reports, 8th Report, p. 94.]

A.D. 1813, January 5.—N° 3634.

WILKINSON, William.—"A method of making horse shears, "wool shears, and glovers' shears."

The "invention consists in affixing a steel spring within or "upon the shank or handle of the shears, or upon the blade "or stop of the blade, all being below the bow."

The spring may be of any form, and attached in any manner.

[Printed, 6*d*. Drawing. See Rolls Chapel Reports, 8th Report, p. 98.]

A.D. 1816, February 29.—N° 3985.

MANTON, Joseph.—"Improvements in the construction and "use of certain of the parts of fire-arms, and also in the shoeing "of horses."

The improvement in the shoeing of horses relate to an instrument for boring holes in the hoof to receive the nails, pins, or screws.

The instrument consists of a flat iron plate with a tube attached to it perpendicularly. The bit of the boring implement passes through the tube and plate, which guide it in a direction perpendicular to the flat surface of the shoe or hoof.

[Printed, 8*d*. Drawing. See Rolls Chapel Reports, 8th Report, p. 113.]

A.D. 1816, May 11.—N° 4025.

ROTCH, Benjamin.—"A flexible elastic horse-shoe."

This shoe accommodates itself to the motion occasioned by the natural elasticity of different parts of the foot, allowing the natural expansion of the heel, and protecting the foot from injury on the road.

The flexible horse-shoe consists of two or more pieces of iron, steel, or other metal, attached by the nails which fasten the shoe to the foot, or by rivets, or by both; or "fastened or applied to " one or more pieces of leather, hat, indian rubber, or any other " flexible substance," which on applying the shoe to the foot is interposed between the horn and the iron. "The most simple " method of making the flexible horse-shoe is by cutting a piece of " stout sole leather, which may be formed like a common horse- " shoe, to the size of the horse's foot," "the web being something " wider than usual; then forge an iron shoe in the ordinary way, " and divide it into three parts, by cutting it across at those parts " of the quarters to where the points of the coffin bone would ex- " tend, and rivet the three pieces" on the piece of leather; "the " shoe thus made is applied with nails in the usual manner. The " flexible horse-shoe is sometimes made by rivetting several studs " of iron on to a piece of leather such as before described."

[Printed, 4*d*. No Drawings. See Repertory of Arts, vol. 30 (*second series*), p. 78; Engineers' and Mechanics' Encyclopædia, vol. 1, p. 710; Rolls Chapel Reports, 8th Report, p. 112.]

A.D. 1820, April 15.—N° 4446.

COLEMAN, Edward.—"A new and improved form of con- " struction of shoes for horses."

"From the pressure of ordinary shoes on the lower edge of the " quarters and heels of the crust in horses of light weight and " low action the expansion and elasticity of these parts are in a " great degree prevented, and concussion, inflammation, and lame- " ness often ensue." To prevent the wear of the horn beyond its growth, and give pressure to the frog, a longitudinal bar of iron or "frog bar" is permanently fixed by welding, screwing, or riveting, to the centre of a short shoe, and extends as far backwards as the ends of the heels of the frog. The frog bar may be added to a long shoe, but a short shoe is preferable. "A shoe " made on this principle will not only give pressure to the frog,

" but very generally prevent contracted hoofs, corns, flat feet sand " cracks, thrushes, cankers, and guittors " and other ailments.

Printed, 6*d*. Drawing. See Repertory of Arts, vol. 40 (*second series*), p. 73; London Journal (*Newton's*), vol. 1, p. 344.]

A.D. 1821, April 5.—N° 4548.

GOLDFINCH, Henry.—" Improvement in the formation of " horse-shoes."

These horse-shoes are of iron, and are divided into two separate parts, which are attached to the horse's foot by nails of a suitable form, so that the division of the separate parts shall be at or near the toe. This division of the shoe is to give freedom to the expansion and spreading of the toe, and other parts of the horse's hoof, and "facilitate the natural action, extension, and growth of " the sole."

The nailing in all cases must be done on the " foreign or French " plan." Instead of the nail holes, as in the English custom, being as close to the outer edge of the shoe as possible, and the nails driven directly up into the hoof, " the nail holes, whether fullered " or counter-sunk " are made at the distance of from one-third to one-half of the width of the shoe from its outer edge, and are to be punctured and made slanting towards the exterior of the shoe, and the nails are to be driven slanting towards the outside of the foot. If nails alone are not sufficient to keep the shoe to the foot, the outer edge may be beaten up to embrace the hoof, and form what are called " clips " at certain places. The bisected shoe may be further secured to the foot by a pin or pins of iron about half an inch long, fixed at the division into one half of the shoe, and fitted into a hole or holes drilled in the other half, but not so tightly as to prevent expansion.

The division may be " straight," " oblique," " indented," " overlapped," or of any form that different cases may require.

[Printed, 6*d*. Drawing. See London Journal (*Newton's*), vol. 2, p. 428.]

A.D. 1822, January 9.—N° 4635.

HARRIS, James.—" Improvement in the manufacture of shoes " for horses and other cattle."

[No Specification enrolled.]

A.D. 1822, December 16.—N° 4735.

DUDLEY, Thomas Barnard Williamson.—"A method of " making or manufacturing malleable cast metal shoes for draft " and riding horses, and other animals."

The first part of this invention relates to the manufacture of shoes for draft and riding horses. They are cast of the best charcoal pig iron, and are afterwards decarbonized and toughened by exposure (for from 24 hours to three weeks, according to the thickness of the shoe) to a high red heat in closed vessels in contact with substances having affinity for carbon, such as iron filings, the black oxide of iron, the scales from a smith's forge, the red hæmatite or ore of iron, and other similar substances.

The second part of this invention relates to an improvement in the "concave shoes recommended by Mr. Joseph Goodwin to " His Majesty, in his treatise on shoeing horses."

A raised border or cord or ledge runs along the inside "rim or " rib" of the shoe, which not only strengthens the inner "rim " or web," but prevents flints, gravel, and stones which may come in contact with the shoe from being forced upon the sole of the foot. The border or ledge has a "rounded or convex" shape, but any suitable shape may be employed. It is applicable to any shoe having " a concave under surface."

[Printed, 6*d*. Drawing. See Register of Arts and Sciences, vol. 1, p. 152; London Journal (*Newton's*), vol. 7, p. 70; Engineers' and Mechanics' Encyclopædia, vol. 1, p. 710.]

A.D. 1823, August 5.—N° 4827.

DICKINSON, Robert.—" An improvement in addition to the " shoeing or stoping and treatment of horses' feet."

This invention consists in the application to the shoe of a " rester," which prevents the whole weight being thrown upon the edge of the hoof. The rester consists of a pad of stiff material, felt or the like, of the shape of the interior of the shoe, and formed to fit the frog. To the upper side of the rester are attached pieces of sponge, to keep the foot moist. The pad may be placed within the shoe, or if needful riveted to it by small iron plates.

The same means may be attained by means of an artificial iron frog supported by a spring.

A special varnish for use with this pad is described; also a special paint.

The varnish alluded to is composed of 5 ounces of shellac, 1 ounce of turpentine, 32 ounces of alcohol, and the paint preferred is Ribblesdale's rock cement, when mixed with common paint.

[Printed, 8*d*. Drawings. See Repertory of Arts, vol. 1 (*third series*), p. 35; London Journal (*Newton's*), vol. 8, p. 128; Register of Arts and Sciences, vol. 2, pp. 81 and 118; Engineers' and Mechanics' Encyclopædia, vol. 1, p. 709.]

A.D. 1823, September 11.—Nº 4841.

WOODMAN, William.—“ An improved horse's shoe, which I “ denominate the bevelled heel expanding shoe.”

This invention is intended to obviate lameness in horses, caused by the heels and frogs becoming narrow and contracted, from the pressure of the heel part of the shoe upon the heel of the hoof, beyond that part usually denominated the bars. The heel of the improved shoe is inclined or bevelled off upon the upper surface, both in a lateral and posterior direction in such a manner that when the shoe is applied to the horse's foot, its pressure will be anterior to the bars, in some cases to the extent of ⅜ of an inch. The surfaces of the bevels on the opposite sides of the shoe are not in one plane, but are inclined to each other in a lateral direction outwards, so that the weight of the horse tends to open the heels. In this mode of shoeing the hoof will sometimes, between the periods of shoeing, grow down so as to touch the bevelled part of the shoe, but the pressure will not be sufficient to produce mischief.

[Printed, 6*d*. Drawing. See London Journal (*Newton's*), vol. 8, p. 18.]

A.D. 1824, October 7.—Nº 5014.

HODGSON, John Thomas.—“Certain improvements in the “ construction and manufacture of shoes, or substitutes for shoes “ for horses and other cattle, and method of applying the same to “ the feet.” These improvements consist in making the shoes of a greater or lesser thickness according to the substance of hoof removed from the under surface of the hoofs of horses and “ other “ cattle.” “ Hoofs fitted with these improved substitutes for the “ ordinary shoes, will preserve the relative position of the foot “ with the leg of the animal, and thereby prevent any alteration “ in the form of the hoof taking place, and the consequent lame- “ ness of the foot and leg arising therefrom. It is recommended “ that the shoes, or substitutes for shoes, be made of an oval “ form, but broadest in front to conform with the bulges.” Instead of the shoe being curved or turned upwards at the heels, it should be turned downwards and outwards. The undermost surfaces of the shoes should be studded all over “ with teeth or “ roughnesses like a rasp ” to prevent the horse slipping, and they should be made concave that the roughnesses may not project beneath the outer border of the shoe.

Exact proportions as to the amount of hoof to be pared away, and the corresponding thickness of the shoe, are given.

[Printed, 6*d*. Drawing. See London Journal (*Newton's*), vol. 11, p. 27.]

A.D. 1828, January 19.—N° 5610.

PERCIVALL, WILLIAM.—" Improvements in the construction " and application of shoes without nails to the feet of horses, and " certain other animals." The invention consists in the addition of such loops and eyes to the ordinary frog bar shoe, as will enable it to be bound to the foot. This shoe when so applied is called a " horse sandal,"

In front of the shoe is a " toe clasp," which turns up on a hinge to the front of the foot. From this straps pass to the back of the hoof, when they are fastened to rings on the heel clips. Through the same ring passes a strap which goes behind over the navicular bone, through this ring on each side, and is then continued to the front and buckled over the coronet bone.

The claims are, 1. The addition of a double loop on the toe clasp, by which the straps are attached.

2. The method above described of fastening the shoe.

[Printed, 10*d*. Drawings. See Repertory of Arts, vol. 8 (*third series*), p. 230; London Journal (*Newton's*), vol. 5 (*second series*), p. 78; Register of Arts and Sciences, vol. 2 (*new series*), p. 259; Engineers' and Mechanics' Encyclopædia, vol. 1, p. 709.]

A.D. 1828, January 26.—N° 5612. (* *)

WEISS, JOHN.—" Certain improvement on instruments for " bleeding horses and other animals." These are in the construction of spring fleams, first making them in such a manner " that " the fleam is not part of nor of one piece with the spring," but " that the spring, or the hammer acted upon by the spring, may " strike the fleam." Second, " introducing a spring or springs to " throw by reaction the fleam from the incision." This is done by cutting away a portion of the under surface of the main spring to admit the fleam to be thrown from the wound, by the reaction of a small spring coming in front of the fleam, fastened from and reaching to a little above its fulcrum. Third, " introducing a " spring or springs to hold the fleam when it has been thrown " back by such reaction." This is done by a small spring attached to the back and near to the bottom of the main spring or hammer. Fourth, " giving a semicircular or any other portion of a circular " movement," to a fleam. On a plate are fastened a fleam and a bent lever, both moving in their own centres, and working into each other with teeth; a spring fits into the bent lever. When it is necessary to operate, the bent lever is brought round and secured by a catch. A lever on the catch is now depressed, and releases the bent lever from it, when the spring, acting upon the bent lever, "causes the lancet or fleam to make a semi-revolution "and make the required incision."

[Printed, 1*s*. Drawing. See London Journal (*Newton's*), vol. 7 (*second series*), p. 21.]

A.D. 1830, March 20.—N° 5922. (* *)

ROTCH, BENJAMIN.—"Improved guards or protection for "horses' legs and feet under certain circumstances."

The "guards or protections" referred to, consist of "shoes," "boots," "knee caps," and "rings," made of caoutchouc or india-rubber, to be applied to horses. The patentee's mode of producing the required article is as follows:—"I procure bottles "of indian rubber, as usually sold in the trade, taking care to "choose the largest that can be procured of an even thickness, "and having steeped them in hot water just under the boiling "point for about five or ten minutes (and cut the necks and "bottoms off, if desired) I stretch them on moulds (made of "wood in preference) to the shape I require for the purposes "aforesaid, and then let them cool, when they will preserve the "shape required." Rings cut out of a caoutchouc bottle may be "applied to the leg above and below the hock to keep on a "poultice; and these rings may be applied as bandages to protect "wounds in various ways." Such articles so made may, from their elasticity, be drawn over the foot and leg, or they may be strapped or buckled on.

By Disclaimer dated A.D. 1835, November 10th, the patentee disclaims that part of the title to the above invention included by the words "and feet," and disclaims that part of his invention relating to the application "of caoutchouc to the protection of "horses' feet," on the ground of "practical difficulties;" as also that part of the Specification referring to the application of caoutchouc elastic rings "for keeping other bandages over wounds on "horses' legs," the same having been previously applied by surgeons and others to the human frame.

[Printed, 6*d*. Drawing. See Repertory of Arts, vol. 11 (*third series*), p. 205; London Journal (*Newton's*), vol. 7 (*second series*), p. 325; and vol. 21 (*conjoined series*), p. 474. For Disclaimer, see Mechanics' Magazine, vol. 15, p. 246; Register of Art and Sciences, vol. 6 (*new series*), p. 39; Engineers' and Mechanics' Encyclopædia, vol. 1, p. 710.]

A.D. 1832, October 22.—N° 6323.

STOCKER, Alexander, and STOCKER, William Southwood.—"Improvements in machinery for manufacturing iron "and other metal tips for the heels and toes of shoes, chain "links, and other articles."

The principal feature of novelty in this invention consists in the arrangement of parts of a machine by which a piece of metal may be bent to a horse-shoe shape. This is effected by fastening the bar of metal with one end in contact with a mould; a roller is then driven round the mould so as to cause the bar to take the shape of the mould. Motion is given to this roller by means of a horizontal disc, in the centre of which the mould is fixed, and about which it revolves. By means of a lever the mould and the bent bar can be raised so that the latter can be removed from the machine.

By a Disclaimer, dated August 16, 1836, Richard Southall, to whom the patentees had assigned their rights, disclaimed "all the "parts separately of which the said machine is composed," and claimed merely their combination and application.

[Printed, 8*d*. Drawing. See Repertory of Arts, vol. 15 (*third series*), p. 327; and vol. 2 (*new series*), p. 74; London Journal (*Newton's*), vol. 7 (*conjoined series*), p. 163; and vol. 21 (*conjoined series*), p. 478 for Disclaimer.]

A.D. 1835, April 14.—N° 6816.

STOCKER, Alexander.—"Improvements in machinery for "manufacturing horse-shoes and certain other articles."

The invention consists :—

"First, in improvements in preparing the iron for making "horse-shoes, and also for making shoes for mules and asses by "means of rollers."

"Secondly, in improvements in machinery for bending prepared "iron into shoes."

Rollers are made with projections that will stamp grooves of the same length as the grooves in a horse-shoe, longitudinally at proper intervals in a bar of iron, the bar to be afterwards cut into suitable lengths, each length containing two grooves. These rollers are formed with hollows, into which moulds proper for forming the grooves are fixed. If necessary the bar may have "a bevelled edge" stamped upon it, on the side which will eventually lie against the foot.

The machine for bending the shoe is as follows :—A mould or die, of the shape of the interior of the shoe, rises from a table. In front of it, and touching it, is laid the bar to be formed into a shoe. On either side "compressing instruments" advance horizontally against the bar, press it against the mould, and bent it round to the required shape. The compressing instruments move at such an angle to the bar as it is originally placed, that they approach one another, and thus form the narrower heel part of the shoe. Holes are afterwards punched in the shoe, and it is complete.

[Printed, 2*s.* 6*d.* Drawings. See Repertory of Arts, vol. 5 (*new series*), p. 157; London Journal (*Newton's*), vol. 9 (*conjoined series*), p. 96; Rolls Chapel Reports, 7th Report, p. 163.]

A.D. 1835, June 2.—N° 6843. (* *)

NYE, JOSEPH.—"Improvements in pumps and instruments or " apparatus for conveying fluids into and withdrawing them from " cavities of human and other animal bodies, part of which im- " provements are also applicable to other pumps." These are, first, combining the reservoir in which the fluid to be injected is placed, "with a pump or syringe, when such reservoir is so con- " structed as to form the seat or part of the seat of the person " using the instrument." The pump is capable of being folded down "on the reservoir, or of standing in any direction to suit " the person using the instrument."

Second, "the application of a peculiar joint to be used for " connecting various parts of syringes, and the tubes for conveying " fluids into the cavities of human and other animal bodies, in " order to obtain a water-tight joint." The ends of two tubes are brought together, one tube having a flange in which a recess is formed to receive a flange on the other tube; a circular plate with a recess in it goes over the flanges and is secured by screws to the tubes with the recess in the flange. Or the tubes may be screwed together by forming one with a male and the other with a female screw, or they may be permanently fixed by soldering, although this is not desirable.

Third, constructing that portion of syringes which contains the valves, and generally consists "of several pieces of castings or tube " brazed or soldered together," of "one piece of metal, having " suitable openings or ways made therein," by being drilled out in the lathe.

Fourth, "certain arrangements of valves for obtaining a double "action to pumps or syringes having but one barrel." Two tubes are affixed to a plate soldered to the bottom of the barrel of the syringe; these tubes again are screwed into screws cut in the valve part. The upper part of these tubes "open into each other, and "the eduction pipe is affixed to the upper part of either of them," while from the other an induction pipe is led into the barrel of the syringe or cylinder. In the two tubes above mentioned, valves with their seats are screwed above the openings of the eduction and induction pipes, and also valves and their seats are screwed below the openings of these pipes into the two tubes.

Fifth, "producing a flexible metal tube for a stomach pump, "by means of ball and socket joints."

Sixth, "consists in the application of an air vessel to the end "of a garden engine or syringe."

By a disclaimer and memorandum of alteration enrolled August 30, 1837, the improvement claimed under the second head is strictly confined "to the application of such joints to "those syringes or small pumps only, the piston rods of which "are acted on directly by the hand employed for administering "clisters, and also such as are used for horticultural or garden "purposes, and are held in the hand when used, such two classes "of pumps having induction and eduction ways separate from "each other."

[Printed, 1*s*. Drawing. See London Journal (*Newton's*), vol. 21 (*conjoined series*), p. 475 for Disclaimer; Mechanics' Magazine, vol. 24, p. 347.]

A.D. 1835, October 8.—N° 6903.

JEVONS, Thomas.—(*A communication.*)—"Certain improved "machinery to be used in manufacturing bar or wrought iron "into shoes for horses, and also into shapes for other purposes."

The improved machinery consists of three machines for effecting in succession the operations of cutting, stamping, and forming the shoe from a bar of red hot iron.

The first machine receives the bar of red hot iron, previously rolled to the required thickness, "and after cutting off the proper "length to constitute one shoe, spreads the middle of the piece "between a pair of rolling segmental swages, and then let it "fall upon an inclined plain which conducts it towards the "second machine." In the second machine the grooves and recesses for the nail holes are indented in the face of the straight piece by a pair of rolling segment dies. In the third machine the iron is bent between a pair of excentric cam rollers into the proper curved shape.

[Printed, 1*s*. Drawings. See Repertory of Arts, vol. 6 (*new series*), p. 67; London Journal (*Newton's*), vol. 8 (*conjoined series*), p. 415; Rolls Chapel Reports, 7th Report, p. 166.]

A.D. 1837, January 31.—N° 7293.

SPRINGALL, John.—" Improved shoes for horses and other " animals." By means of top and bottom dies a blank is pressed into the form of a shoe, with a " concave arc " on the lower side. This hollow is afterwards to be filled up with " iron, steel, lead, " or leather." Shoes thus made are said to stand wear better than those entirely of steel.

[Printed, 10*d*. Drawing. Repertory of Arts, vol. 8 (*new series*), p. 292.]

A.D. 1837, April 27.—N° 7354.

BERRY, Miles.—(*A communication.*)—" Certain improvements " in machinery or apparatus for making or manufacturing horse- " shoes."

[No Specification enrolled.]

A.D. 1837, July 19.—N° 7403.

BAKER, Whitmore.—" An instrument or truss applicable to " the nicking of horses' tails."

The invention consists of an instrument or truss to support the tail, which is attached to the horse so that he can be turned loose, The truss consists of a plate of iron which fits over the sacrum, and is lined with sponge or leather. It is held in place by a crupper, a strap passing from the tail round the chest, a girth, and a neck strap.

[Printed, 8*d*. Drawing. See Repertory of Arts, vol. 9 (*new series*), p. 275.]

A.D. 1840, January 22.—N° 8358.

DE GOURNAY, Jules Alphonse Simon. — " Improvements " in the manufacture of horseshoes."

" This new invention of a horseshoe, which may be made of " any kind of metal, either simple or compound, forged or cast, " the bridle or band of which may also be of leather, metal, or

" any other material, simple or compound, consists of an ordinary " horseshoe of three specific parts only: first, the shoe properly " called the bridle or band, and a small point, stop, or catch, " called in French, talus, which enters the wall of the hoof. This " shoe is an ordinary shoe furnished with one or two clips or " crotchets," " drawn out from the mass or soldered, and situated " on the fore part or toe at the extreme border of the shoe. The " shoe may have one or two roughs or teeth" "in the interior." Two "ears or stays" "drawn out from the solid or soldered" are shown. "The branches of the shoe are pierced for the talus," " which are rivetted in, placed in an inclined direction, of a form " somewhat triangular, and may be in number from two to eight. " These talus enter the wall of the hoof in a small notch," "which " is cut for the purpose. The ears or stays serve to receive the " extremities of the band or bridle." "This band or small fillet " may be made, as before described, of different material, but is " mostly of iron. It has the form of a circular arch, and represents on the hoof a sort of a V. It is made in such a manner " that the ends are turned over and rivetted, forming a sort of " loop," "at the end in which is placed the ears or stays; it then " passes over the crotchet or clip, of which the extremity is " curved, and rivetted."

"For winter the shoes are pierced" for screws, which are " placed and displaced at pleasure, and made of iron or steel. " Cogs may also be placed and removed in the same manner."

"In case of disease or defect, the crotchet or clip has a hinge " which communicates with the band by means of screws" " which work upwards. This mode prevents the necessity of " using the hammer on the hoof, and facilitates the stepping of " the horse. It preserves the hoof in a state of cleanliness, which " is very desirable during dressing. This last system may be " applied equally to young horses and racehorses, which are " frequently shod and unshod."

[Printed, 10*d*. Drawings. See Repertory of Arts, vol. 14 (*new series*), p. 154; London Journal (*Newton's*), vol. 22 (*conjoined series*), p. 95; Inventors' Advocate, vol. 3, p. 67.]

A.D. 1841, January 11.—N° 8782.

HARRIS, Thomas.—An improved "jointed horse-shoe, made in " five pieces, so arranged that expansion may be allowed in the " heels without throwing all the motion to the toe where in nature

" there is no action at all, and as is the case in the ordinary " jointed shoe made of three pieces."

The "five pieces consist of a toe-piece, one off-side piece, one " near-side piece, and two rivets." The latter serve to unite the side pieces of the shoe to the ends of the toe-piece; and the joints are so formed as to limit the motion of the side pieces, but at the same time to allow the necessary expansion at the heel when the foot comes to the ground.

[Printed, 6*d*. Drawing. See London Journal (*Newton's*), vol. 22, (*conjoined series*), p. 96: Mechanics' Magazine, vol. 34, p. 448; Inventors' Advocate, vol. 4, p. 390.]

A.D. 1841, January 19.—N° 8798.

VAUX, Thomas.—" Improvements in horseshoes."

This "invention relates to a mode of constructing horse shoes, " with moveable caukings or projections," in order that the shoes may be "roughed" and "unroughed" with facility when required, and without taking off the shoes. A dovetail groove in front of the shoe receives a caulk or projection which is firmly retained by a screw. At the hinder parts of the shoe also are dovetail grooves which receive projections. These are secured by pins or screws driven into holes formed at the back of the shoe, and bent over. Two projections may be used in front, and secured in the same manner. Another manner of fastening the front projection is described. The shoes are made by casting in malleable cast iron, with great accuracy, so that the grooves do not require the use of a file; and the holes for the screws and for the pins are drilled or produced in casting, and those for the screws are to be capped to suit the screws. The castings are to be annealed for from seven to ten days. The parts of the shoe where the grooves are made should be thicker for the sake of strength.

[Printed, 10*d*. Drawing. See Repertory of Arts, vol. 16 (*new series*), p. 344; London Journal (*Newton's*), vol. 22 (*conjoined series*), p. 97; Mechanics' Magazine, vol. 35, p. 108; Inventors' Advocate, vol. 5, p. 68.]

A.D. 1842, February 25.—N° 9266.

REYNOLDS, Osborne.—" Certain improvements in covering " streets, roads, and other ways with wood, and also in the means " of enabling horses and other animals to pass over such roads " and other slippery surfaces with greater safety than heretofore."

The second part of this "invention consists in forming bars, " ribs, or projections on that part of the underside of horeshoes,

" which is between the toe and the caulk, for the purpose of preventing horses from slipping." The drawing shows the underside of a shoe with three ribs at the toe following the curve of the shoe, the ribs on the other parts running transversely.

[Printed, 6*d*. Drawing. See Repertory of Arts, vol. 18 (*new series*), p. 338; London Journal (*Newton's*), vol. 22 (*conjoined series*), p. 98; Mechanics' Magazine, vol. 37, p. 264; Record of Patent Inventions, vol. 1, p. 58.]

A.D. 1842, March 7.—N° 9286.

RODWAY, HENRY BARRON.—" Improvements in the manufacture of horse-shoes."

The patentee says,—" My invention relates to constructing " horse-shoes by employing bar iron rolled with a groove therein, " equal at least to three-eights of an inch wide, and produced by " rolling in bars of iron not less than three-quarters of an inch " wide. In making horse-shoes as heretofore practised, there has " been usually a small groove towards the outer edge of each " horse-shoe, where the holes are punched for receiving the nails, " and this groove has in some cases proceeded all round, particularly in what are called racing plates. In such cases the " groove has been about wide enough to receive the heads of the " nails by which the horse-shoes are affixed. I do not, therefore, " claim the making horse-shoes with grooves generally, but only " when such grooves are at least three-eighths of an inch wide, " and made by rolling in a bar of iron at least three-quarters of " an inch wide."

[Printed, 8*d*. Drawings. See Repertory of Arts, vol. 18 (*new series*), p. 291; London Journal (*Newton's*), vol. 21 (*conjoined series*), p. 188; Mechanics' Magazine, vol. 37, p. 475; Record of Patent Inventions, vol. 1, p. 98.]

A.D. 1843, May 6.—N° 9722.

TURNBULL, JOHN.—" Improvements in the manufacture of " horse shoes."

The object of this invention is to construct a shoe with a soft treading surface, not liable to slip. The shoe is made light, and preferably, of steel, with a plate that covers the lower part of the foot. Within this shoe, and upon the plate, is a pad of felt or soft material, which impresses betweeen the foot and the ground. The felt pad is fixed by being forcibly driven into the shoe, where it fits tightly, but it may be secured by hot pitch.

For preventing horses slipping, a " secondary shoe " with holes through which loose studs are passed, is shown. The studs are kept in their places by being conical-shaped, and pressed against the ordinary shoe, so that while the shoes are in position, they cannot move.

Several methods of attaching "shoe-frames" to an ordinary shoe are shown in the drawings, but are not described.

[Printed, 1*s.* 2*d.* Drawings.]

A.D. 1843, July 6.—N° 9818.

NEVILLE, James.—"Certain improvements in the form and "manufacture of horse-shoes." Bars of malleable iron of requisite size are united by welding, to a strip of steel of equal length and about ⅓ to ½ an inch square. The bars are so welded together as to leave the steel forming a ridge or projection on what will be the wearing face of the horse-shoe. This ridge is rather less than half of the whole width of the bar. After being heated, the bars are passed between a pair of rollers, one of which is fluted, chased, or indented, so as to form on the ridge two rows of studs or teeth, with a groove between for the reception of the nails; the holes for which are afterwards punched out. When the shoe is made from the bar, the steel studs should be tempered.

The bars may also be made with a single row of studs, with or without a groove.

[Printed, 6*d.* Drawing.]

A.D. 1843, August 8.—N° 9861.

HOME, James.—"Improvements in the manufacture of horse-"shoes."

The improved shoe at its under side consists of two surfaces; one of them at the outer edge of the shoe corresponds with the crust of the horse's foot; on this projecting surface or ridge the horse treads, and by it the crust of the foot is protected and supported. This surface is fullered in its centre to receive the heads of the nails. The toe piece is of steel. The other surface or thin plate is an extension beyond the surface; it is in contact with the foot, being attached to the crust; and in no way differs in the inner surface from the common shoe. The ridge or surface may be considered a continuation of the crust of the foot of the horse, while a plate which extends towards the centre of the foot, but is not in contact with the sole, gives protection to the sole.

An improved shoe is described, with angular projections on the heels, which projections incline from the outer edge towards the centre of the foot. These projections may be applied to other shoes. Another shoe is described having the toe piece and projection at the heels rising above the level of the ridge or outer edge of the shoe. These shoes can be made lighter than those commonly used.

[Printed, 8*d*. Drawing. See Repertory of Arts, vol. 3 (*enlarged series*), p. 278.]

A.D. 1843, November 9.—N° 9933.

CLARENDON, Thomas.—" An improved method of shoeing " horses."

The object of this invention is to fasten on the shoe, so as to allow of the elastic action and growth of the hoof, and also to render unnecessary the use of so many nails. The shoe is fastened on by two nails at the toe, " the heads and necks of which " are firmly imbedded into the iron of the shoe in the usual " manner," one on each side of a common toe clip, and by T or wedge headed nails, the necks of which are fitted, at or near the quarters of the shoe, into grooves or openings formed in the shoe in the direction of the elastic action of the hoof. These last-mentioned nails are termed " slide nails," and cavities are countersunk on each side of the grooves to receive the T or wedge-shaped heads thereof, and to prevent friction from the road. The nails, both at the toe and heel, are driven in from below, and instead of turning back and clinching them, copper or other metal washers are passed over the points of the nails, which are then hammered back on to the washers, and so form rivets. Sometimes more nails are necessary according to the structure of the hoof and the habits of the animal, In this method of shoeing, a shoe having clips on the inside of the heels is generally used, to give increased steadiness, and when the shoe is intended for frosty weather or wooden pavement it may have a wide fullering or continuous concavity on the under surface. To prevent the wearing of the hoof by friction, a thin plate of brass may be tacked on to the sole of the hoof on each heel before fixing on the shoe. The holes and countersinking are made by punches. The slide nail is the ordinary horse-shoe nail with the head filed to the required shape. The riveting process may be varied by using screw nuts, or by using a continuous band of metal pierced to receive the several nail points, and attached round the whole or a part of the outside of the hoof by having those points riveted or screwed back on it.

[Printed, 6*d*. Drawing.]

A.D. 1844, January 11.—N° 10,007.

HILL, LAURENCE, junior.—(*A communication.*)—"Improve-"ments in machinery for manufacturing shoes for horses and "other animals."

By this invention "a bar of heated iron of proper dimensions" is cut to the requisite length and the ends squeezed so that they are narrowed to form the heels. The piece of iron is then "passed "between rolling segmental dies, the peripheries of which have "a greater velocity than the sliding frame that carries the "griping dies and pieces of iron, and forces the metal from that "end which last comes under their action back towards the "middle of its length, the inner surface of one or both of the "griping dies being hollowed out, when extra width is required "for the toe of the shoe, to receive the iron from both ends." "The tendency of the segmental dies running with greater "velocity than the sliding frame, &c. to force back the metal, is "prevented in drawing from the end first acted upon towards "the middle by the ends of the gripping dies and the piece "against which the iron bears; it therefore goes towards the "middle where the enlarged space between the gripping dies "leaves it free to enter, and after passing the middle this greater "motion of the segmental dies draws the metal back, as it is not "permitted to elongate, by the inner face of the cutter against "which the end bears, and the tendency of this increased motion "of the dies, independent of any resistance at the end, is to "draw the metal back, hence all the surplus metal at the ends is "carried to the middle, where it is required to form the toe of the "shoe, which requires greater width."

If the shoes are to be thicker at the heels, the dies do not act upon the heels, but if the same thickness throughout is needed, the dies act upon the whole of the metal.

After this the metal, still retained in the gripping dies, is submitted to the action of a second set of dies, which "straighten "out any bend in the iron which may have been produced by "the first set of rolling dies." The iron is thence transferred to the bending machine, in which "segmental pieces or cams" drive it against a die of suitable form.

[Printed, 2*s.* 4*d.* Drawings. See Repertory of Arts, vol. 6 (*enlarged series*), p. 65.]

A.D. 1844, July 24.—N° 10,271. (* *)

HALL, JOSEPH.—This invention relates to the manufacture of horse-nails, by stamping or cutting them out of sheet iron properly prepared by rolling, and then subjecting them to an annealing process. One of the rollers employed for preparing the plates carries a plain surface, and the other, at intervals corresponding to the length of a nail, is longitudinally grooved, and in one direction from each groove, in order to vary the thickness of the plates and give the necessary tapering form to the nails when cut therefrom, the surface of the roller is gradually reduced. The grooves in the roller form transverse projecting ridges on the plates, which are then cut into strips, the ridge being left on the thickest edge of each strip. Crosswise from these strips by means of suitable dies the nails are stamped, each nail having a portion of the ridge which forms the head. The nails are then subjected to the annealing process, and thus brought to a proper condition to bear hammering and sharpening by the blacksmith.

To save the point of the cutting die, an enlargement is formed at the end, producing a circular or other shaped piece at the point of the nail, which piece is afterwards removed.

By employing rollers properly prepared to act as revolving dies, the rolling and punching processes are combined.

[Printed, 6*d.* Drawing. See Repertory of Arts, vol. 5 (*enlarged series*) p. 71; Mechanics' Magazine, vol. 5, p. 109.]

A.D. 1844, November 25.—N° 10,403. (* *)

DORR, EBENEZER MAY. — (*Partly a communication from John Miller.*) — This invention relates to the manufacture of horse-nails. Ordinary rods of nail iron, heated to a welding heat, are passed between narrow rollers which have side flanges to prevent lateral expansion whilst the metal is longitudinally drawn out by the process. The surface of one of the rollers, at intervals corresponding to the length of a nail, is grooved across in the direction of its axis, and the grooves, as the heated rods pass between the rollers, raise solid projections on the rod; these projections are intended to form the heads of the nails. The rods thus prepared, are afterward operated upon by a punching press, furnished with steel dies in two parts accurately fitted, and made adjustable by means of screws. The prepared rods in a cold state are so introduced between the dies at every stroke of the machine, that the projections come into the enlarged part of the dies, whereby sufficient metal is provided for forming the heads. After this cutting process the nails are made ready for use by the ordinary process of annealing.

[Printed, 1*s.* 2*d.* Drawings.]

A.D. 1845, March 27.—N° 10,581.

WOODIN, DENNIS.—" An improvement in the form of shoes " for horses or other animals, and the process of accomplishing " the same." The object of the invention is to form " the upper " surfaces of shoes for horses and other animals, in such manner " as to give greater holding by affixing a peculiar system of " roughing." The invention has to do with the upper surface only, or part which comes next the ground. A projection at the inner edges of the plate forms part of the surface which sustains the foot when it comes on the ground; this projection may be close or distant from the edge of the plate. A series of projections, which may vary in shape, rises to the same level as a front projection, and radiates therefrom to the outer edge of the shoe. Between the projections are recesses, so that the foot of the horse or other animal which has such a shoe fixed on it would be supported by the series of surfaces, the toe pieces, and hinder projections. The holes for the nails are made through the plate and in the recesses between the projections, which offer sufficient roughing and tend to prevent sliding, and the foot will be supported at all parts owing to the projections being all on the same level. By the projections a sufficient extent of surface is obtained for supporting the horse's foot when on the ground.

A shoe is described with large headed nails which practically act as projections. A concave shoe with " course fullering " and one with " double fullering " is described. The shoes may be made of malleable cast iron in moulds made to pattern, or by forging, or dies or bars of iron for the shoes may be rolled.

[Printed, 6*d.* Drawing. See Repertory of Arts, vol. 7 (*enlarged series*), p. 149; London Journal (*Newton's*), vol. 27 (*conjoined series*), p. 248; and *vol.* 28 (*conjoined series*), p. 451; Mechanics' Magazine, vol. 44, p. 238.]

A.D. 1845, April 9,—N° 10,605.

POWELL, Charles.—"Certain improvements in the construction of horse shoes."

The iron to be converted into horse-shoes is produced "by machinery after the usual manner of fabricating bars of iron of different sectional figures by rolling mills and similar mechanism." "Such bar of iron so manufactured is produced from the fabrication of horse-shoes, having straight grooves formed uniformly through the entire length of the bar in its first formation, such straight grooves so formed become curvilinear grooves through the linear extent of the horse-shoe, when the straight bar is bent into the curved figure required for such horse-shoe." The heels of the shoe are formed by "jumping," or beating up, the ends of each of the lengths cut off from the bar to form the shoes, and such ends after the bar has been curved to form the shoe, are turned down. Where the toes are required to be steeled, the process is performed in the usual manner. Those portions of the bar of which the heels are formed are made solid or without grooves.

[Printed, 6*d.* Drawing. See London Journal (*Newton's*), vol. 29 (*conjoined series*), p. 33.

A.D. 1845, April 15.—N° 10,620.

BLACK, Charles,—"Improvement in the manufacture of horse-shoes."

The shoes are formed of iron suitable for conversion into steel, and are then converted by the aid of electric currents applied according to the method described by Dr. Arthur Wall, in the Specification of his patent for "Improvements in the manufacture of steel;" or the bar may be converted into steel and the shoes made therefrom.

[Printed, 4*d.* No Drawings. See Repertory of Arts, vol. 6 (*enlarged series*), p. 359; London Journal (*Newton's*), vol. 27 (*conjoined series*), p. 353.]

A.D. 1845, May 29.—N° 10,692 (* *)

KEENE, Charles.—"Improvements in boots, shoes, gaiters, overalls, and other like articles of apparel;" and these are, first, "coating or covering, either wholly or partially," boots, &c. "with gutta percha."

Second, "interposing gutta percha in any of its sheet states between *other* materials in the making of boots;" &c.

Third, employing, in the manufacture of boots, &c. compound fabrics described.

Fourth, making boots, &c. "all in one piece, or in two or more " pieces by casting,"

Fifth, uniting the parts of boots, &c. "when any two parts, or any one of the two parts, are or is composed of gutta percha in " any of its states of preparation or combination, by cementing " instead of sewing or stitching them together."

Sixth, "sulphurizing the said boots, &c. when made of unsul- " phurized caoutchouc or gutta percha," by exposing them to the fumes of sulphur from half an hour to an hour in a close vessel, or immersing them in a bath of melted sulphur.

Seventh, improving the shoes of horses by the addition of sheets or layers of sulphurized gutta percha or caoutchouc, or by making them wholly of either of these materials.

The gutta percha is prepared according to processes described in Specification of Patent Nº 10,550,

The fabrics mentioned in the third improvement are gutta percha combined or not combined with caoutchouc or sulphur, &c. with a portion of leather, dust, or horsehair, or bristles, or ground cork, or woollen shavings, &c.; also, fabrics made by saturating a fleece of cotton, wool, &c. with a solution of gutta percha, &c.

[Printed, 4*d*. No Drawings. See Repertory of Arts, vol. 7 (*enlarged series*), p. 17; London Journal (*Newton's*), vol. 28 (*conjoined series*), p. 432; Mechanics' Magazine, vol. 44, p. 269.]

A.D. 1845, November 3.—Nº 10,917 .(* *)

WATNEY, ALFRED.—" Improvements in the manufacture of " horse-shoes, and in applying shoes to horses and other animals."

These are, first, the mode of manufacturing shoes for horses and other animals from iron and steel, rolled into bars in such a manner that the steel may come to the wearing surface.

Second, the mode of running cast steel into a mould against a hot bloom of iron prepared to receive it, and "thus forming " a pile of steel and iron to be subsequently rolled into bars for " the shoes."

Third, applying vulcanized india-rubber between "the shoe " and hoof, in any form that may be found desirable."

[*Printed, 6d. Drawing.* See Repertory of Arts, vol. 7 (*enlarged series*), *p. 170; Patent Journal,* vol. 1, p. 7.]

A.D. 1846, March 11.—N° 11,131.

VAUX, THOMAS.—"Improvements in the manufacture of horse-"shoes and horse-shoe nails,"

The improvements consist in fixing the front calking and "in "forming horse-shoes and nails for the same, whereby the nails "can be drawn out singly without injuring the foot." The calking "readily drops into a recess formed in the shoe, there "being a hole through the plate in which the front calking is "is formed," through which a projection passes; and the whole is secured by a pin. Also the front calking may be secured by a wedge which enters dovetailed grooves. A shoe of the ordinary construction is described with nail holes countersunk to allow a strong pointed instrument to get under the heads of the nails, whereby they can be drawn out singly, without the liability of injuring the foot.

[Printed, 6*d*. Drawing. See London Journal (*Newton's*), vol. 29 (*conjoined series*), p. 274; Patent Journal, vol. 1, p. 277.]

A.D. 1849, April 3.—N° 12,560.

PARRY, WILLIAM.—"Certain improvements in shoeing horses "and in horse-shoes."

Holes are formed at certain intervals through the foot, to correspond with holes made in the shoe, and wire fastenings are employed. Circular holes are made in the shoe in pairs, by drills instead of by driving nails. In fastening the shoe, two ends of bent wire are introduced through the pair of holes in the foot, passed through the holes in the shoe, twisted together, and bent down into the "fullering groove," or recess, of the shoe. Twisting the ends of the wire draws the shoe to the foot very tightly, and the bending or embedding of the wire prevents its wearing, excepting as the shoe wears away. When recesses are used they should be filled with iron cement.

The fastening wire should be of the best and strongest manufacture, and annealed. Other means of fastening the wire may be practised, so long as the holes in the feet are drilled, and wire is used for fixing the shoes, and the shoes modified so as to suit them for this mode of applying and fixing them.

[Printed, 6*d*. Drawing. See Repertory of Arts, vol. 14 (*enlarged series*). p. 359; London Journal (*Newton's*), vol. 35 (*conjoined series*), p. 264. Mechanics' Magazine, vol. 51, p. 334; Patent Journal, vol. 8, p. 288.]

A.D. 1849, May 15.—N° 12,612. (* *)

POOLE, Moses.—(*A communication.*)—" Improvements in appa-" ratus for drawing fluids from the human or animal body." These are, first, " in apparatus for scarifying the human or animal " body in order to draw blood therefrom ;" the " cutter is tubular " and is caused to cut by rotation about an axis ;" the cutter is regulated as to depth of puncture by a screw ; a pulley with a cord fixed thereon gives rotatory motion, the ends of such cord pass through holes in a case.

Second, for " obtaining a partial vacuum to facilitate the draw-" ing of blood or fluid from the surface," using a glass cylinder with a piston, which, instead of being drawn out by the hand as usual, is drawn out by turning a screw nut or handle resting upon the cap of the cylinder, the piston rod having a screw formed upon it.

[Printed, 8*d*. Drawing. See Mechanics' Magazine, vol. 51, p. 500; Patent Journal, vol. 8, p. 90.]

A.D. 1849, December 15.—N° 12,900.

HOBSON, Richard.—" Certain improvements in the manu-" facture of horse-shoes, and in apparatus for taking the measure-" ment of horse-shoes, or horse's hoofs."

The object to be attained is to produce shoes of various shapes and sizes according to the form of hoof required to be fitted, and the nature of the work which the horse is intended to perform. For this purpose means are provided for " taking the exact " measurement of the tread surface of the hoof to be fitted, or " of the shoe, a counterpart of which is required to be made." By applying these measurements a " shaping block " is constructed on which to form the required shoe.

The instrument in question consists of a dial-plate with an index formed of a graduated sliding bar. This is fastened on the shoe, and the dimensions taken by means of the scale. These measures are " pricked off " on a piece of metal, and a " shaping " block " may thus be cut out for use in a " horse-shoe machine."

A shoe is made " with a V-groove or fullering," " at the " middle of its width ;" this is " interrupted by solid parts " " which respectively form the heels and toe of the shoe." The *clips are bent up,* not hammered out.

When roughed shoes are required for winter wear, the necessary tread surface is obtained by rolling the bars from which the shoes are formed with indentations on the ribs, or on one of them, instead of "roughing" the tread surface after the shoes are made.

A long description of a machine is given in which the iron is first rolled between dies and then passed in to be bent round the shaping-block. This is done by two pairs of pliers, which hold the bar at each end. After it is bent, a hammer block strikes up the heels, if required.

In some cases "the rest surface of the shoe" is coated with gutta-percha, by pressing the shoe on it within a mould.

[Printed, 2*s.* 6*d.* Drawings. See Mechanics' Magazine, vol. 52, p. 495; Patent Journal, vol. 9, p. 167.]

A.D. 1851, June 24.—Nº 13,674. (* *)

HODGES, RICHARD EDWARD, and BROCKEDON, WILLIAM.—"Improvements in surgical instruments." These are, first, "in "surgical instruments to be introduced into passages or orifices "in cases where it is desired that parts of the instruments may "expand when within the passages or orifices." The following, or modifications thereof, are described:—A long piece of metal tubing, of the desired thickness to enter the passage, is taken, and to this is attached an end of metal (which may be either closed or open) by a flexible tube, in preference made of vulcanized india-rubber; a rod or stem passing through the tube is attached to the point end, and fastened by a small chain at the other end, so as to keep the india-rubber tube extended; in this state it is introduced into the passage, and by releasing the chain the india-rubber will contract in length and expand in diameter. When this instrument is used for animals, four or more tubes to be connected together may be used, to be expanded separately and in succession.

Second. "In surgical instruments for relieving the bowels, "urinary organs," &c. This is effected "by means of partially "exhausted vessels or receivers," by preference made of gutta percha. The aperture is fitted tight to the part of the person by immersing it in warm water, or the orifice is covered with vulcanized india-rubber. The vessel is exhausted by an air-pump.

This arrangement may be applied to extract milk from cows, and in that case the instrument is made with "a shield to receive "the teats through apertures." The shield may be "secured

" air-tight to the vessel which is to relieve the milk," or the vessel and shield may be connected by a pipe.

[Printed, 8*d*. Drawing. See Repertory of Arts, vol. 19 (*enlarged series*), p. 215; London Journal (*Newton's*), vol. 40 (*conjoined series*), p. 106; Mechanics' Magazine, vol. 56, p. 17.]

A.D. 1851, October 9.—N° 13,765.

LILLIE, SIR JOHN SCOTT.—" Improvements in forming or " covering roads, floors, doors, and other surfaces.

The only part of the improvements relating to this subject is the covering "horse-shoes with gutta percha, asphalted felt, " vulcanized india-rubber, or other suitable material studded with " metallic bolts, nails or screws, which will serve at the same " time to attach such improved surfaces to the" "horseshoes " or hoofs."

[Printed, 6*d*. Drawing. See London Journal (*Newton's*), vol. 40 (*conjoined series*), p. 450; Mechanics' Magazine, vol. 56, p. 318.]

PATENT LAW AMENDMENT ACT, 1852.

1852.

A.D. 1852, October 1.—N° 35. (* *)

HUCKVALE, THOMAS.—" Improvements in instruments for " administering medicine to horses and other animals." This consists of the following combinations:—" A cylinder or vessel to " contain medicine, fixed at the end of a stem or tube, there being " a piston in the vessel the piston rod of which passes through " the tubular stem, so that the piston may be forced outwards or " the vessel drawn back, after the cylinder or vessel has been " introduced into the mouth of an animal."

[*Printed, 6d.* Drawing.]

A.D. 1852, October 14.—N° 387.

MAJOR, Joseph. — "Removing spavins, ring-bones, curbs, "splents, and other unnatural ossifications and humours from "horses."

A combination of ingredients forming an embrocation which is applied in a liquid state, acts without causing any pain, and restores the diseased limb to perfect soundness. Take fourteen parts of senica oil by weight; four parts by weight of Barbadoes tar; five parts by weight of oil of rosemary; three parts by weight of oil of lavender; six parts by weight of spirits of turpentine; and three by weight of Venice turpentine.

These ingredients are intimately mixed together and placed in an earthenware vessel; sixteen parts of sulphuric acid are then stirred in gradually; and when effervescence has subsided the preparation is complete. The hair is to be cut from the parts to which this remedy is applied. The parts should be kept dry for at least 10 days, as wet impairs the effect of the medicine, and the animal should not be worked for two or three weeks.

[Printed, 4*d*. No Drawings.]

A.D. 1852, November 26.—N° 886. (* *)

BRUNDAGE, Edwin Lewis.—(*A communication.*)—"Improve-"ments in apparatus for drawing off fluids from animal bodies." These are "the combination of a breast cup, cupping or leeching "glass, with a flexible chamber," which, by "being compressed, "to exhaust the air therefrom," expands "by the force of a "spring contained therein, and which is provided with a valve or "valves, arranged so as to open as desired, to permit of the "exhaustion of the chamber, and to operate in an opposite "manner to insure suction when the cylinder shall expand."

[Printed, 6*d*. Drawing.]

1853.

A.D. 1853, February 15.—N° 399.

FRANCIS, Henry.—(*Provisional protection only.*)—"Improve-"ments in instruments for cutting wool, hair, and vegetable "matters."

The instrument described has a blade with a serrated edge of bevelled teeth. The blade is of various shapes, sometimes circular. The principle is described as follows :—"An angular tooth, a "cutting edge at the base of each tooth, and a mode of sharpening "the teeth and applying them to their work, which precludes "their cutting too close in whatever operation employed;" it is also said "that the principle of this cutting instrument can be "applied from a small up to a large scale, and is even adapted "for agricultural purposes."

[Printed, 6*d*. Drawing.]

A.D. 1853, February 21.—N° 442.

PIDDING, William.—"Improvements in coverings for the "feet of bipeds or quadrupeds."

A novel species of boot or shoe which is highly elastic and yielding to the sole of the foot, and may be ornamental on the upper portions. The shoes for bipeds and quadrupeds are made as follows :—The soles are made hollow, of gutta-percha or india rubber, and filled with liquid, preferably oil; when required to be very light and slightly elastic, the sole-casing is filled with air.

The india-rubber sole casing is caused to retain its shape by sewing throughout its surfaces numerous india-rubber threads; and to prevent the oil or other liquid or air escaping where the threads have been sewn, numerous coatings of a solution of india-rubber or gutta percha are applied; each coating being allowed to dry before another is applied. The result to the feet will be that the pressure will always be equally felt throughout the surface; and "when a person is walking on pebbles he will feel as if "walking on a carpet."

The method is described of covering and withdrawing the moulds from the india-rubber. To preserve the shape of the sole when sewing in the threads, the sole-casing is filled with melted wax through a hole left for the purpose. When the wax is cooled the threads may be sewn through without contracting the surfaces. The wax is then got rid of; oil, water or air is introduced in its place, and the solution of india-rubber is applied.

[Printed, 6*d*. Drawing.]

A.D. 1853, February 28.—N° 504. (* *)

MAJOR, Joseph.—(*Provisional protection only.*)—"Improvements in preparing lotions." These are, "combining the "following ingredients into a lotion for horses and other "animals." "Neatsfoot oil, creosote, oil of lavender, Barbadoes "tar and rum."

[Printed, 4*d*. No Drawings.]

A.D. 1853, August 8.—No. 1847.

NEWTON, William Edward.—(*A communication.*)—"Improvements in horse-shoes."

This invention "consists in making the shoe of two plates, "between which the india-rubber or other elastic substance is "confined, one of the plates being securely nailed to the hoof "and the other being firmly screwed to the upper plate after the "india-rubber has been interposed." In the drawing two screws are shewn, one on each side of the shoe midway between the heel and toe.

The following is a modification of the invention:—"The shoe "is made in one piece, and is afterwards slit in any appropriate "manner nearly in two," so as to leave two solid parts, one on each side, midway between the heel and toe. The india-rubber is then introduced between the plates, which have sufficient spring to retain it. The nail holes and a groove to receive the heads are made in the solid parts. The shoe may be made of wrought iron, but tempered steel is preferred.

[Printed, 6*d*. Drawing.]

A.D 1853, October 22.—N° 2442. (* *)

BAILY, John.—"The cure of the roup and other diseases in "fowls and poultry." This is effected by a pill composed of powdered bark, ginger, rhubarb, and sulphate of zinc, with water, all in certain proportions.

[Printed, 4*d*. No Drawings.]

A.D. 1853, November 19.—N° 2689. (* *)

CASTETS, Auguste.—"An improved composition for curing "diseases in the feet of animals." This consists of "animal oil, "and by preference that extracted from the feet of oxen, sheep, "or horses," "gum copal, or resinous gum," tar, "an alkaline

" solution (either potash or soda)," wax and tallow. These are mixed together in certain proportions and in a certain manner, but the proportions may be varied.

[Printed, 4*d*. No Drawings.]

A.D. 1853, December 1.—No. 2794.

BELLFORD, Auguste Edouard Loradoux.—(*A communication.*)—" Improvements in machinery for manufacturing horse-" shoes."

In the machine described, the double die round which the shoe is bent, moves between two " bending arms " which are directed by suitable mechanism, so as to yield sufficiently to allow the die to carry the iron between them, and thus force it to the shape required. The process is as follows :—Bar iron is cut into pieces of a certain length and thickness; after being heated each piece is placed by an attendant upon a rest to be seized between the face of the upper die and part of the lower die. When the piece of iron is seized, it is carried backward by the dies until it is brought in contact with two rollers or bending arms, which have already been brought close together by cams; the points of the dies enter between them and commence forcing them apart, the rollers are caused by the action of the forming pieces or cams, and the bending arms, to follow the shape of the dies, and bend the iron round the raised part of the face of the lower die. The form is given to the inside of the shoe by the raised part of the lower die, and to the outside by the rollers actuated by the cams. The thickness of the shoe is regulated by space left between the face of the top die and the recessed part of the face of the bottom die. This space is generally left greater towards the back of the shoe, to make the back parts thickest; these parts are narrowed by the forming pieces approaching nearer to that part of the face which receives them; the shoe remains on the lower die until it comes under the shaft, when it drops off.

There is also a press for grooving and counter-sinking the face of the shoe. The calks are turned by the farrier.

[Printed, 10*d*. Drawings.]

A.D. 1853, December 8.—2844.

REEVE, William George.—(*Provisional protection only.*)—" An appendage to horse-shoes, to supersede the necessity of " *roughing them*, as hitherto practised."

Instead of the "heels of horse-shoes being roughed or turned "up at the end," a process which necessitates the removal of the shoe, a plate, roughed, or bearing points, is fitted at the under and posterior part of the horse-shoe, and secured to the shoe by a transverse bar fitted to the inner or foot surface of the shoe by a nut and screw. The plate and bar are easily removed by unscrewing the nut.

[Printed, 4*d*. No Drawings.]

1854.

A.D. 1854, January 23.—N° 163.

TAYLOR, JOHN GEORGE.—(*Provisional protection only.*)—"Improvements in treating the fleeces or natural coverings of "sheep and other animals, when on the animals."

This invention relates to a composition for dressing or treating the fleeces of sheep, &c., for the prevention of disease and improvement of the wool.

"The dressing material is composed of oil derived from the "distillation of common coal, parrot coal, the boghead or torbane "mineral, or other like mineral mixed with about 25 per cent., "more or less, of rosin, resin, or resinous matters," to which may be added "a portion of bees-wax, or waxy material."

[Printed, 4*d*. No Drawings.]

A.D. 1854, April 11.—N° 851.

SCOTT, URIAH.—"Improvements in the adaptation of elastic "material to boots and shoes, and shoes for horses and other "animals."

A plate is provided with a socket for a screw, and a screw to correspond therewith; this screw has an ordinary projecting screw head, by which another plate is attached; between these two plates the elastic material is introduced, that the pressure of the foot may be exerted against an elastic substance. Several sockets and screws may be introduced instead of one pair only of plates with socket and screw.

The first named plate is secured to the hoof.

The elastic material is adapted to boots and shoes by having a plating against the underside of the heel or sole, such leather being secured to another plate of leather with the elastic material.

Two clips at the end of the upper shoe have orifices for attaching them together by an elastic band, to keep the shoe in its position. The plates used are formed in preference of brass, as these allow of india-rubber being vulcanized with, and cemented to them, but they may be of horn or tough wood, or stiff leather. Though the invention is principally applied to the heels of boots and shoes, it may be applied to the soles also.

[Printed, 10*d*. Drawings.]

A.D. 1854, October 23.—N° 2254. (* *)

SAVAGE, George.—" A new or improved singeing lamp." The body of the lamp is a flat or wedge-shaped vessel, divided into two compartments, one the wick chamber, the other a reservoir for naptha or other combustible liquid, the communication being by means of a stop cock. The handle is hollow and opens into the reservoir by forked extremities. For the purpose of filling the reservoir and handle, the latter has at its end a screw cap. There may be a stop cock in the reservoir, opening outside the lamp, to admit air. For a more rapid supply to the wick, two stop cocks may be employed. In this arrangement, the extremity of the handle may not be forked. The reservoir and handle may be filled through a feeder introduced into the former. The screw cap is then dispensed with, and the handle does not project so far into the reservoir.

[Printed, 6*d*. Drawing.]

A.D. 1854, November 8.—N° 2371.

BARTHOLOMEW, George.—(*Provisional protection only.*)—" Improvements in boots, shoes, and other coverings for the " feet."

The boots and shoes are manufactured so that the actual wearing surfaces of the soles and heels may be easily and effectively renewed as these parts wear out. "The main body " portion of the boot or shoe is made in the ordinary way," but the soles and heels need not be so thick. A thin wedge-shaped or inclined face-piece of metal is screwed or otherwise attached to the thin sole portion, so as to project clear of the sole or heel and act as the internal wedge holder of the moveable wearing piece. This moveable wearing piece is, in the case of the heel, a piece of leather cut to correspond with the contour of the heel and having a thin wedge border-piece of metal screwed to its inner face, shaped to embrace and fit to the permanent wedge-piece on the thin shoe heel. Thus the wearer or maker has simply to enter the corresponding wedges into holding contact by sliding the moveable piece laterally into its place; and the disengagement of the shifting piece is prevented by two screws passed through the moveable heel into the permanent portion of the shoe. When the heel is worn down, the wearer takes out the two holding screws and slides back the heel, when he may substitute a new heel piece. The sole is constructed in a similar manner.

The invention is applicable to horse-shoes, and enables the shoes to have new wearing surfaces supplied from time to time in a simple manner.

[Printed, 7*s*. 8*d*. Drawings.]

A.D. 1854, December 29.—N° 2750.

LOYSEL, Edward.—"An improved lavement or injecting "machine."

This apparatus consists, in its most simple form, of a vase with an opening at the lower part, to which a flexible pipe, provided with a nozzle of appropriate form and a stop cock, is connected. In operating with this machine, the vase is filled with the liquid to be injected, and placed at a proper elevation above the patient, so as to cause the liquid to flow with facility.

A small stirring apparatus is fitted to the lid of the machine. It is actuated by a spring, and causes fans or stirrers to rotate in the liquid, and keep it well mixed.

This apparatus may be used for animals as well as for human beings, it being only necessary to increase the size for horses or other large animals.

[Printed, 4*d*. No Drawings.]

1855.

A.D. 1855, January 18.—Nº 138.

PIDDING, William.—" Improvements in the coverings for the " feet of bipeds and quadrupeds."

Horse-shoes, the soles and heels of boots, shoes, goloshes, and slippers, are manufactured of caoutchouc, or a compound thereof, having cells in it of various sizes connected together; the cells are to contain air, gas, or liquid. In some cases the external surfaces of the horse-shoes may be corrugated.

" It will be sometimes desirable to form some portions of the " external surfaces of soles, heels, and horse-shoes, with a fabric " composed of hardened steel studs and sheet caoutchouc, and " secured in perforations of the latter."

Uppers for horse-shoes are made of caoutchouc, and together with the horse-shoes are caused to adhere to the feet of the horse.

They are further secured by cords passed through eyelet holes in the back of the uppers and tied.

[Printed, 4*d*. No Drawings.]

A.D. 1855, February 27.—Nº 427.

GARDNER, Henry.—(*Provisional protection only.*)—" Certain " improvements in the construction of horse-shoes, and in shoes " used for the shoeing of hoofed animals."

The shoe is of the ordinary shape, but without the groove at the bottom, and has about six small nail holes to permit of the shoe being fastened on in the common manner. On the bottom surface about five holes are drilled in a slanting position, with worms for screws, " or the said holes may be without worms, and made " of any shape or size to admit of any other implement in lieu " of screws, and for any fastening, by spring or otherwise, not a " screw."

On the exposed surface of the shoe a cavity is sunk round each hole for the partial admission of the head of the screw " or other " implement in lieu of screws." A screw or implement in lieu thereof, that fits each hole containing the worm, is made with a square, triangular, or other shaped head of depth sufficient, when screwed or forced in, to project beyond the under or exposed surface of the shoe, and raise it from the ground when in use. The ends and objects of the improvements are economy in preserving the shoe from wear.

The advantages of this invention are;—the shoe is preserved from wear and tear, it may be more readily roughed, and the horse may be shod by an unskilful person without fear of its being lamed.

[Printed, 4*d*. No Drawings.]

A.D. 1855, March 1.—N° 457.

JOHNSON, John Henry.—(*A communication.*)—(*Provisional protection only.*)—" Improvements in machinery or apparatus " for rolling and shaping metals."

"This invention relates to an improved construction and " arrangement of rolling mill, applicable to the manufacture of " horse-shoes, railway wheel tyres, and other curved articles, and " consists in combining an ordinary plain roll; or it may be " slightly modified in form, according to circumstances, with a " block or plate running on a centre, and having a groove or slot " formed in its surface, corresponding in curvature and shape to " the article required. The grooved plate is rotated by a cylin- " der or roller underneath it, such roller having small notches or " projections formed round its periphery, which take into corre- " sponding notches in a projection on the under side of the " revolving horizontal table. This driving roller is situated " immediately below the pressing roller, and serves thereby as a " support to that side of the table under pressure. Both the " pressing and driving rollers are actuated by suitable gearing, " which is so arranged as to cause them to rotate in opposite " directions. The bar to be shaped, is fed whilst at a red heat " gradually into the shaping groove, being drawn in as the table " and pressing roller revolves. The groove having been filled, " the bar is cut off from that portion in the groove or matrix " by being pressed by the pressing roller against a fixed knife " situated in the groove."

[Printed, 4*d*. No Drawings.]

A.D. 1855, April 13.—N° 820.

JARMAN, John. — (*Provisional protection only.*)—" Improve- " ments in horse-shoes of that description known as " expanding "shoes," which are formed in two or three parts hinged together to enable the shoe to adapt itself to the shape of the horse's hoof without first passing through a fire. In the improved shoe, the toe and a portion of one or both its sides are formed of one entire piece of malleable cast iron, or of wrought metal, and the remaining portion of the side or sides of the shoe are formed of bars of cast or wrought metal of the same description, and are connected to the toe part by a mortice joint, so that the parts cannot become detached, and at the same time the sides of the shoe will have a free lateral and expansive movement, when the hoof is forcibly pressed down; but this expansive action has been found injurious in consequence of all parts of the shoe not being sufficiently supported by each other to preserve one nearly uniform shape, and have something of the character of an ordinary shoe. To remedy this defect a stiff spring of sheer steel is connected to the toe part and side bars of the shoe, and embedded in them by forming a recess along the inner edge on the part of the shoe next the hoof. By these means the shoe expands when pressure is exerted, and unnecessary expansion is obviated. The under surface of the shoe may be corrugated, and leather interposed between the upper surface of the shoe and the hoof. The heads of the nails may be embedded in a grooved channel formed in the shoe, or the nail holes may be countersunk to receive the heads of the nails.

[Printed, 4*d*. No Drawings.]

A.D. 1855, April 13.—N° 822. (* *)

HILL, THOMAS.—(*A communication.*)—This invention relates to the manufacture of horse-shoe and other nails cut from wrought iron or other metal plates, specially rolled for the purpose, the heads being formed to project on more than two sides, or on sides not opposite, by the rolling and subsequent cutting operations.

One of the rollers employed is plain on the surface; the other roller is longitudinally grooved at intervals corresponding to the extreme length of two nails, for the purpose of raising a transverse ridge on the metal plate, and from an intermediate line between the grooves, the surface of the roller in both directions is gradually reduced, in order that the rolled plate may be thinnest at the intermediate line and gradually thicken towards the ridges. The plate is then cut transversely through the centre of each ridge, and intermediately across the thinnest part into strips, in width corresponding to the length of a nail. The strips by a subsequent operation are transversely cut into nails by a machine resembling the common punching press. The half ridge left along one side of each of the strips, forms the heads, a small portion being removed between the shank of each nail in order that the latter may gradually taper to the point.

The manner of rolling the plates may be modified.

[Printed, 6*d*. Drawing.]

A.D. 1855, April 18.—N° 856.

COOK, Benjamin.—(*Provisional protection only.*)—"Certain "improvements in the construction of horse-shoes, and which "said improvements are also applicable to the shoeing of asses, "mules, and oxen, when such are used as animals of draught, "such shoes being applied in each case without the use of "nails."

The improved shoe is made in two parts, and united at the toes or heels, such parts having projections on the outer edges for clipping the hoof, and the shoe is secured by a small cross bar laid across the back, or in the hollow of the hoof. This bar is tapped with a right and left-handed screw, which screws take into tapped holes in the two parts forming the shoe. When the shoe is applied to the hoof of the animal, and the cross bar is turned, the two sides will be drawn together, clipping the hoof in a firm manner.

The shoe may be applied hot, so as to burn away the hoof until a proper bearing is produced. Or this may be obtained by filing. The two parts of the shoe may be united by a strong piece of india-rubber or gutta percha, so as to allow expansion or contraction.

[Printed, 4*d*. No Drawings.]

A.D. 1855, April 19.—N° 875. (* *)

JOHNSON, John Henry.—(*A communication.*)—"Improve- "ments in the manufacture of articles of hard india-rubber or "gutta percha, or compounds thereof, and in coating or covering "articles with the like materials."

Among numerous articles proposed to be made of the above materials, "horse-shoes" are enumerated.

Respecting the preparation of the materials, and the mode of moulding, reference is made to the Specifications of T. Hancock, A.D. 1843, No. 9952; T. Hancock, A.D. 1846, No. 11,135; C. Hancock, A.D. 1846, No. 11,032; Brockeden and Hancock, A.D. 1846, No. 11,455; W. Johnson, A.D. 1854, No. 1819; J. H. Johnson, A.D. 1854, No. 752; J. H. Johnson, A.D. 1855, No. 506; and J. H. Johnson, A.D. 1855, No. 855. The articles are first moulded when in a soft state, and then submitted to a high degree of heat in steam heaters, or to the action of a sulphur bath. "In some cases it is proposed to form the "article of this compound in a plastic state, and then submit "it to the action of heat after being removed from the mould, or "the article may be submitted to the heating process while still "in the mould. During the process of vulcanizing, the article "may be embedded in magnesia, which is preferable to soapstone "or plaster, since these materials bleach the articles during the "process," "whilst the magnesia allows them to come out of the "mould quite black."

[Printed, 4*d*. No Drawings.]

A.D. 1855, May 15.—Nº 1099. (* *)

BOUSFIELD, George Tomlinson.—(*A communication.*)—This invention relates to the manufacture of wrought nails which, by the new process, are cut from heated metal plates, rolled to a thickness corresponding with the required strongest part of the shank of the nail. The mechanism comprises a double set of parts, separately arranged to act alternately at opposite sides of the machine on tapering pieces of metal, so cut from the heated metal plate by a vibrating double edged cutter and the fixed cutter of each set of apparatus, as to taper in form alternately from opposite sides of the plate, which moves to the cutters, there being no intermediate loss or waste of metal between the successive cuts. Two gripping dies suitably formed and combined with a vibrating cutter, and two others with the fixed cutter of each set, by turns receive the cut pieces, and so mould them to the required form without elongating the metal, that if desired they may taper on the four sides, and as in the case of horse-shoe nails, have a slight swell at the head; the latter is formed at the thick end by a punch simultaneously with the gripping process, a nail being discharged from each set or side of the apparatus every successive stroke of the machine.

The cutters employed are of iron cast in chills; they and the dies are kept cool during the process by water, which is caused to flow upon them through suitable channels, while oil drops on the working parts.

[Printed, 2*s*. 4*d*. Drawings.]

A.D. 1855, July 17.—N° 1599. (* *)

PIDDING, William.—" Improvements in coverings for the " feet of bipeds and quadrupeds." These are, manufacturing the soles of shoes for quadrupeds, and the soles and heels of boots and shoes for bipeds, " of caoutchouc or a compound " thereof with gutta percha." These soles and heels are so constructed as to have cells or reservoirs for " air, gas, or liquids " hermetically closed. The area of the sole is enlarged by having the cells open, stretching them, and filling them with gas, &c., and attaching a sheet for the tread. The treading surface may have hardened steel studs inserted in the caoutchouc, or, when cells are not required, " angular shaped studs made of wood, " glass, metal, papier maché, gutta percha," &c. For horseshoes, uppers are made of caoutchouc extending " as high as the " top of the hoof." Heels of shoes may be made partly combined with " springs of tempered metal."

[Printed, 4*d*. No Drawings.]

A.D. 1855, November 28.—N° 2691.

CLARKE, Charles.—(*Provisional protection only.*)—" Improve- " ments in applying roughings to the feet of horses."

The invention consists in forming temporary shoes with roughings to be worn by horses over their ordinary shoes. The under surface of the shoe is made of a metal plate turned up at the edges to a greater extent at the front than at the sides of the shoe. On the upper surface of the plate is fixed stout leather or other suitable substance on which the ordinary shoe is to rest. Through openings in the plate, and inner surface of leather, the spikes or roughings are fixed by screws and nuts or otherwise. To fix this shoe to the foot of the horse there is an " upper " or rim of leather, made to the form of the hoof at the front and sides, the upper edge of the leather being notched out to admit of its contraction when on the foot. Two straps fix the shoe to the hoof, and the back edges of the "upper" or rim fold over a back piece of leather which rises from the hinder part of the shoe.

[Printed, 4*d*. No Drawings.]

A.D. 1855, December 15.—Nº 2836.

COATS, George. — "Improvements in horse-shoes, and in " attaching the same to the horse's feet."

The improved shoes are formed with "separate pointed pieces " for the 'wearing edges' of the toe and heels of the shoe, such " pieces being capable of removal and readjustment without it " being necessary to take the body of the shoe off the horse's " hoof;" or the shoes have a joint at the toe with clamping flanges upon the upper front edges of the sides of the shoe, which is fixed upon the hoof by being simply closed upon it, the clamping flanges fitting the upper conical portion of the hoof; or the shoes may be attached to the hoof without nailing them, by securing them to a "saddle piece" of thin metal clamped upon the upper conical portion of the hoof. Or the shoe may be constructed in two or more pieces, one of which is nailed to the hoof, whilst the others are attached to this main body piece, so as to be capable of removal and re-adjustment or replacement without un-nailing and re-nailing the shoe on the hoof.

Elastic play is obtained in the hoofs by interposing a piece of caoutchouc between the clamping or binding portions of the shoes.

[Printed, 8*d*. Drawing.]

1856.

A.D. 1856, January 3.—Nº 14.

HAINES, Frederick.—"The deadening of sound, and the " prevention of vibration and concussion in connection with " machinery, gun, and mortar boats, and general ordnance, and " other purposes."

This invention relates to the application of cork for preventing vibration and concussion; and amongst other uses the patentee employs it "in the shoeing of horses and cattle, in lieu of leather, " and for knee and other pads. The cork sole for horses is pre- " pared with or without linen, sheet gutta percha, or woollen " fabric. Horses shod on this principle, if affected with disease " in the feet, soon become sound. It is also a preventive for " lameness in high action horses, and those continually on the " stones of London or paved towns."

[Printed, 4d. No Drawings.]

A.D. 1856, January 22.—Nº 166.

FONTAINE MOREAU, Peter Armand le Comte de.— " Improvements in machinery or apparatus for manufacturing " nails."

" The invention consists, firstly, of an improved method of " flattening the wire, by means of a system of levers, which " cause suitable steel dies to act upon the wire in opposite " directions; secondly, of improved means for further shaping, " heading, and cutting the nail.

" To a cast-iron frame or standard is fixed a shaft, working in " suitable bearings, and carrying a fly wheel and fast and loose " pulley for giving motion to the machine. Upon this shaft are " placed a series of cams, one of which actuates a lever of the " second kind. To this lever is attached a connecting piece, " which connects two levers together. The fulcra of the latter " are so placed as to cause two steel dies to meet and press the " wire in opposite directions, this being the first operation in " forming the nail. By means of a cam on the shaft, another " lever is brought into action, for giving by suitable steel sliding " dies an angular or round shape to the shank or stalk of the " nail. Two other cams acting against suitable levers then cause " the sliding steel cutters to come into action, which hold, cut, " and finish the shank or stalk of the nail at the same time it is " being headed by the header or hammer. This header works " horizontally between suitable guides. One end is provided " with a slot, in which works a cam on the shaft, for giving, in " combination with a wooden spring, a suitable movement to the " header. At its opposite end is placed the steel die, which heads " the nail and finishes the operation. The levers are furnish

" with antifriction rollers, against which the cams work. The " wire is fed in by suitable apparatus.

" This machine is adapted for manufacturing horse-shoe and " other nails of various shapes and metals."

[Printed, 1*s.* 4*d.* Drawings.]

A.D. 1856, July 8.—N° 1613.

SHORT, Sewall.—" Certain improvements in horse shoes, and " shoes for other animals."

" This improvement in metal shoes for horses and other animals " consists in affixing to a shoe, formed like a common shoe, a " rim of metal which shall surround the lower part of the hoof " and come up over the same, so as to secure the shoe to the hoof " in a firm manner without nailing, while it permits the natural " expansion and working of the hoof in action." The rim of this shoe is so arranged that it may be sprung on to the hoof. Sometimes the rim is jointed at the side and is secured when on the hoof by a bar run through holes in the heels of the rim, or if elasticity is required by a helical spring, or the toe part of the rim may be permanently affixed to the shoe and the rear part loose.

In another modification the shoe is made in two parts, with the joint in the centre of the toe, running through the rim and shoe part, which latter overlaps.

[Printed, 6*d.* Drawing.]

A.D. 1856, August 19.—N° 1936.

BURDEN, Henry.—" Improvements in machinery or apparatus " for manufacturing shoes for horses, mules, and other animals."

A machine for manufacturing shoes from bar iron as it is discharged from the rolling mill without reheating. The bars are rolled square and placed in a cast-iron trough in connection with the machine. A portion of the bar is drawn into the machine and cut off; it is then bent round a mould into the shape of a U. The heels of the shoe are then bent more inwards, " whilst the " bar is passed between two revolving dies that compress and " roll it into its proper form; it is then creased or grooved and " punched, and finally it is taken from the dies and flattened, " and dropped in a finished state upon a travelling chain or belt " *that conveys it to* the storehouse." " The feeding apparatus

" consists of two rollers driven at equal speed, one revolving in " fixed bearings," the other " approaching to and receding from " the former continuously." The latter roller is connected to the sheering and cutting apparatus to feed the bar in, whilst the cutting apparatus is inactive. In bending the rod into the form of a **U**, when fed into the machine, it passes under holding guides and above a "bending tongue" mounted on a frame actuated by cams; the rough length being cut off the "tongue" advances against the bar, and carries it forward until it is bent into the required form. The tongue then recedes, the holding guides, bend the heels of the shoe closer, and it passes between two revolving dies that flatten the toe and bevil the inside; the shoe then passes under a scraper. Perfect accuracy in the working of the dies is attained by making the spur wheels, which drive them, in two sections or plates, one keyed upon the journal of the roller, and the other loose and attached to the former section; when the bolts are loosened the moveable section is advanced till the teeth gear closely without shaking; the nuts are tightened and the shaking or "backlash" of the gearing is prevented.

[Printed, 1*s.* 8*d.* Drawings.]

A.D. 1856, September 6.—N° 2075.

ANELLI, JOSEPH.—(*Provisional protection only.*)—" A crampon to prevent horses slipping in frosty weather."

The " crampon " is made of iron, steel, or other metals to the shape and size of the horse shoe, with two holders in front, and two resisting shoulders behind, with two pivots at their tops on which two bands with loopholes to turn over, made of leather, elastic iron, steel, or other metals, are riveted and fastened together over the holders on the horse's hoof by a screw, strap, clasp, spring, or elastic. To prevent slipping steel points are screwed under the frame of the crampon.

[Printed, 4*d.* No Drawings.]

A.D. 1856, October 21.—N° 2476.

NEWTON, WILLIAM EDWARD.—(*A communication.*) — " Improved machinery for rolling and forging iron or steel."

The first part of this invention has for its object to forge iron or steel into bars by using revolving rolls, one of which approaches or recedes from the other, their motions being entirely under the control of the operator, so that a greater or less pressure may be put upon the metal as required.

" The second part of the invention has reference to an improved " machine for bending iron, which is particularly applicable to " bending and shaping horse-shoes, but may be used in many " other cases where iron or metal is required to be bent into " specified forms.

" Supposing it to be required to produce horse-shoes, the form " around which the shoe is bent is to be temporarily secured to " a carriage by means of a lever and clamp, which is forced down " on the form by an excentric or cam piece. The piece of metal " to be bent is also secured to a sliding carriage by another lever, " which is similarly held down by means of an excentric and a " hand lever. The metal is bent by means of a pair of levers, " which are pivoted to the bed, and are connected together by a " strap piece, and at their forward ends they are provided with " anti-friction rollers, which bear against the metal to be bent; " the position of the forward ends of the levers being determined " and regulated by an excentric or cam, which is placed between " their hinder ends, and is moved on its centre by means of a " hand lever. The bending operation is effected by forcing back " the carriage on which the piece of metal with its form or mould " is secured, as above mentioned, and by thus pushing or carrying " back the carriage the piece of metal is forced between the open " jaws of the bending levers, and the piece of metal is bent round " the form; this being done the levers are released and the bent " piece of metal removed from the frame, and upon placing and " securing another piece in the same manner and repeating the " same operation, the next piece will be bent and so on.

" The third part of the invention consists in certain improve- " ments in the clamps of punching machines. The article to be " punched rests upon the bed of the machine, and is secured " there by means of a stationary and moveable clamping jaw. " The stationary part of the jaw is adjusted by means of screws, " and the moveable part is brought up against the article to be " punched by adjusting set screws, and is composed of two por- " tions, which are hinged together in the middle; the jaw is thus " made to comform itself to articles of any irregular form or " width, as, for instance, the blanks for horse-shoes; and in order " *that* the set screws may have an equable bearing upon the jaw " *in any position* which the latter may assume, the screws are

" connected to the jaws by ball and socket joints. The blanks " for horse-shoes are secured in this clamp and confined upon " both sides while the nail holes are being punched, by which " means the iron is prevented from swelling out as the punch " enters the metal.

" The fourth part of the invention consists in a peculiarly constructed machine for the purpose of welding metals.

" The fifth improvement consists in a peculiar machine for " welding calks to horse-shoes. The horse-shoe is secured on the " anvil, and a vertical rod having a notch made in its lower end " to hold the calk is pressed down on the shoe by a spring. A " hammer secured to the end of a spring helve is suspended above " the upper end of the vertical rod which holds the calk, and is " operated by means of tappets, which lift up the hammer and " allow it to fall with a quick succession of blows upon the end " of the vertical rod. The calk being placed in a suitable depression in the surface of the shoe, the two are placed in a " heated state beneath the vertical bar, when a few blows of the " hammer will complete the welding operation."

The above machines are particularly intended for and are applicable to the manufacture of horse-shoes; but they may be employed for a variety of uses where analogous operations are to be performed.

[Printed, 1*s.* 4*d.* Drawings.]

A.D. 1856, November 14.—N° 2695.

BINKS, Christopher.—" Improvements in converting iron " into steel and giving a coating of steel to iron."

The " invention consists in convertingmasses of iron into steel, " either wholly or superficially, by the use and application of " certain cyanogen compounds or other materials containing and " capable of imparting to the iron both nitrogen and carbon, or " either, according to the quality or composition of the iron " operated upon; such converting compounds or materials being " sprinkled upon or otherwise applied to the surface of the iron " as it passes through the rolling mill or under the hammer, " or is subjected to a mechanical action of any other kind, " whereby fresh surfaces of the metal are developed and presented " to the action of the converting compound, till it either wholly " or partially converts the iron into steel.

"It consists further in effecting the (so called) cementation of
" iron in its conversion into steel, namely, by exposing the iron to
" the action of certain compounds of cyanogen or of other
" materials containing and capable of yielding to the heated
" metal the elements nitrogen and carbon, for its complete
" conversion into steel."

Amongst the objects to which the invention is applicable horseshoes are mentioned.

[Printed, 4*d*. No Drawings.]

A.D. 1856, December 11.—N° 2937.

REAY, William Walker.—(*Provisional protection only.*)—
" An improvement or improvements in shoes for horses and other
" animals."

The groove in the shoe into which the nails are driven is wider and deeper than that in the ordinary shoe. A wedge-shaped piece of iron or steel is placed at each heel of the shoe and another at the middle or bent part or toe of the shoe. The said pieces are connected with the shoe by a portion of each being fitted into the groove and fastened by pins passing through the shoe and pieces. The pins may be riveted.

[Printed, 4*d*. No Drawings.]

1857.

A.D. 1857, January 9.—N° 83. (* *)

BAGSHAW, John, and HARRIS, John Paine.—" Improved
" medicinal mixtures adapted for curing diseases of cattle."
These are, first, " copper dissolved in aqua-fortis for curing " foot
" rot."

Second, tobacco liquor, spirits of turpentine, spirits of wine, sal ammoniac, soft soap, and " halken root," for curing " scab
" mange." "The halken root " is used " as a die to mark those
" sheep that have been operated upon by the above mixture."

Third, birthwort, rhubarb, brandy, spirits of nitre, laudanum, *gentian root*, ginger, sulphate of magnesia, gin, and syrup of *caraway seed*. " This mixture " is " used as a lambing drink."

Fourth, nitrate of potash, spirits of turpentine, sulphate of magnesia, and Armenian bole. This mixture is "used as a scouring "mixture for cattle."

Fifth, "sulphur vivian," "assessetia," helebore, oil of wormwood, and white lead powder. This mixture, called a "fly "powder," "is well adapted for preventing flies from striking "sheep."

In all the above mixtures the proportion in which each substance is used is stated.

[Printed, 4*d*. No Drawings.]

A.D. 1857, February 12.—N° 415.

MAYNARD, Edward.—(*Provisional protection only.*)—"An "improvement in calks for the shoes of animals."

The calk is constructed with a conical or tapering body, on the end of which is a screw thread; a hole is then made in the horse or other animal's shoe, of a tapering form, to correspond with the calk, and with a screw thread at the smaller end of the hole. The calk is screwed into the shoe, and the conical body in the conical hole sustains all the strain on the calk, and the blow of the animal's foot tends to tighten the same in the hole. The part of the calk projecting from the shoe is to be of a conical, pyramidal, chisel, or other suitable shape.

[Printed, 4*d*. No Drawings.]

A.D. 1857, April 18.—N° 1094.

HARRIS, Thomas.—"Certain improvements in the mode of "constructing and applying horse-shoes."

One object of the improvement is to fix shoes on the feet of horses without the use of nails; or partly by nailing and partly by the use of metallic straps.

Another is to make shoes so that they may have pieces of iron or steel readily applied to or removed from the toes and heels to prevent the horse slipping in frosty weather.

Holes are made in the sides of the shoes near the heels, through which a piece of soft wire is passed round the hoof, through a strap from the toe, and fastened. Or the strap may be omitted, and a couple of nails inserted in front.

Holes are formed in the shoes, and corresponding projections in the additional pieces of iron or steel, which are secured by a pin or by lead being run in.

[Printed, 10*d*. Drawing.]

A.D. 1857, April 25.—N° 1172.

NEWTON, William Edward.—(*A communication from Henry Wright Adams*).—"The application of certain substances not "hitherto used for food as a source of nutrition and support to "the respiratory organs of animals."

"The invention consists in preparing and using bituminous, "caking, splint, pitch, and cannel coal, or coal of every name and "sort," from the least to the most highly impregnated, "together "with humus, asphaltum, lignite, bitumen, peat, the oxydized portions of petroleum, coal tar, crude coal oil, and also resins of any "kind which are the oxidized residuums from the evaporation or "distillation of the volatile hydrocarbons of the turpentine or "balsam species, as a constituent source of food in combination "with corn, potatoes, rye, oats, barley, buck wheat, or other "farinaceous or feculaceous or proper food for animals of all "sorts." Any of the first named substances are ground to a fine flour in a mill. The other substances, such as grain, potatoes, hay, straw, peas, beans, the screenings of flour mills, the lees and refuse of distilleries, house slops, or similar food containing starch, sugar, or gum, or vegetable albumen, fibrin, or casein, if they are in a solid condition, are reduced to a fine flour, meal, or paste, either by grinding or boiling and mashing up, to prepare them for mixing with the pulverised coals, bituminous or resinous matter, "and for kneading together by aid of water or any proper "fluid into a consistent doughy mass for the use of animals."

The composition for feeding and fattening hogs is composed of one quarter by weight of pulverised bituminous matter to three quarters by weight of boiled potatoes, mashed; or the proportion may be varied according to the quantity of bitumen contained in the coaly or other matter. The larger the quantity of bitumen, the larger is the proportion of coaly matter that may be employed. Grain and other substances may be employed instead of potatoes. Hot water is used to mix the meal and the pulverised coaly matter together.

This food may be prepared and used for all animals by mixing with the coaly matter food suitable to the animal to be fed.

[Printed, 4*d*. No Drawings.]

A.D. 1857, April 27.—N° 1181.

DE KEYSER, Polydore.—(*A communication.*)—"An apparatus "*for preventing* horses slipping." The apparatus consists of a piece of hard metal, having two arms that form a groove of sufficient width to fit a portion of the "flukes" or ends of the horse's shoe; one of the arms is higher than the other, and projects inwards at its upper part. In the centre of the groove is an opening to fix another piece of metal. On the under side of the apparatus is a piece of iron terminating in a point. One of the arms has an ordinary nut screw placed on the inner side of the shoe. Two or more of the apparatus are applied to each or either shoe, and they are fixed to or removed from the said shoes by adjusting the nut screws afore-mentioned.

[Printed, 4*d*. No Drawings.]

A.D. 1857, May 2.—N° 1237.

JONES, Prime Raban.—(*Provisional protection only.*)—" An " improved composition for the purpose of curing, or preventing, " the scab in sheep and lambs, which will also greatly promote " the growth of the wool, and destroy ticks, lice, and other " vermin or impurities, keep the skin clean and healthy, and cure " the mange in horses, dogs, and other animals."

One of the ingredients (a preparation of sulphur) destroys the acarus scabiei, the cause of the disease; the other ingredients, an infusion of roots, herbs, and leaves, and the inner bark of certain trees, bring the skin into a healthy state, and very much promote the growth of wool.

The composition is made as follows :—

To one gallon of boiling water add 24 ounces of marshmallow roots and leaves; and when cold add 8 ounces of sulphuric acid. The mixture to be applied outwardly.

[Printed, 4*d*. No Drawings.]

A.D. 1857, September 7.—N° 2336.

SCOTT, Uriah.—" Improvements in boots and shoes, applicable " in part to shoes for horses."

The second part of this invention " consists in making the shoes " of horses in one or more parts, and placing india-rubber or " other elastic or soft material between the inner and outer shoe." The outer surface of the shoe is corrugated to prevent the horse slipping.

When two shoes are used, the inner shoe is nailed on to the horse's foot, and the outer shoe is fixed to the inner with studs and screws, with the india-rubber between, so as to prevent concussion to the hoof. When clips are used, they are placed around the inner shoe. In the single or double shoe with clips, a joint is used at the toe or at the sides to allow the foot to expand. A band of india-rubber or other material is then fixed "across the " jointed shoe, and one also on the side of the hind clip to go " across the upper part of the foot, and to fasten on to the opposite " side towards the heel of the horse, to keep the shoes on without " the use of nails."

[Printed, 6*d*. Drawing.]

A.D. 1857, September 9.—N° 2352. (* *)

BACON, Joshua Butters.—(*A communication.*)—(*Provisional protection only.*)—This invention relates to machinery for manufacturing horse-shoe nails. The machine operates upon the heated metal by the pressure in rapid succession of a series of segments of rolls, fitted on vibrating centres to act in pairs, and so arranged that, in order to impart the necessary toughness to the nails, the pressure of each successive pair in the series is lateral to the preceding. Suitably arranged between each pair of segments there are feed rollers, which pass the metal pieces in succession from pair to pair of segments, the first pair at every forward movement cut off the required length for a nail, partially give it shape, and pass it on to the next, the operating faces of each successive pair being so progressively fashioned that the last pair of segments delivers a finished nail every vibratory movement of the segments, the whole series being caused to act simultaneously backwards and forwards by means of a crank, the action of which is somewhat longer than the length of a nail.

[Printed, 4*d*. No Drawings.]

A.D. 1857, September 22.—N° 2460.

NEWTON, William Edward.—(*A communication.*)—" Im" proved machinery for forging metals."

This invention relates to machinery for forging metals, for which Letters Patent were granted in October 21, 1856. The forging is performed by means of a pair of "pressing rollers" revolving with an equal surface speed, the bearings of the shaft of the lower roller sliding up and down in grooves to allow the under roll to approach and recede from the upper roll while in operation, a movement effected by cams on the shaft having fixed bearings in the frame; a hand lever is attached to the shaft for adjustment.

The machine is particularly suitable for forging the blanks for horse-shoes that are afterwards to be bent to a form; when such a shape is to be given the bar of iron being rolled that it requires the lower roll to be raised a certain amount at stated intervals, an arrangement of cams and levers is adopted, to be thrown out of gear by the operator by which the machine is made automatic.

A cam shaft is placed below the roller, the cams of which raise and lower it as required. On the shaft are arms connected with rock levers mounted on a shaft at the lower part of the machine. The short arms of these levers bear upon cams which receive motion from the main shaft. "By changing the cut of the cams " any required variations in form may be given to the rolled " metal."

"The invention consists, secondly, in placing one or more fric- " tion rolls in the stationary guards, which hang upon the two " pressing rolls for the purpose of relieving the friction of the bar " or piece of metal being rolled."

[Printed, 10*d*. Drawings.]

1858.

A.D. 1858, January 13.—N° 57.

MATSON, Charles Edward.—" Improvements in roughing " horse shoes."

" The roughing pieces consist of pieces of iron adapted to the " shoe, having projecting pins or studs of iron or steel." In applying the roughing piece to the toe, it is bent up so as to clip the front of the hoof, and is extended underneath the shoe towards the centre of the heel in the form of a screw. This screw passes through a bridge piece stretched across the inside of the shoe, which bridge piece is forked at its ends so as to hold the inner edge of the shoe. "A nut placed on the screw exerts a pressure against " the cross bar, and fixes the roughing piece firmly in position."

In roughing the heels, a cross bar with forked ends is introduced at the wide part of the shoe, and forced backwards to the heels. The studs are on the ends of this bar. "The pressure is "exerted by a nut and screw placed between that and another "forked cross bar placed within the shoe nearer the toe, which "fixes the roughing parts firmly in position, which are readily "removed or applied when desired."

[Printed, 6*d*. Drawing.]

A.D. 1858, February 1.—Nº 180.

BARTHOLOMEW, GEORGE.—"Improvements in horseshoes, "and in attaching the same to the horses' feet."

A horseshoe that may be easily attached to the horse's foot without driving nails into the hoof, and may also be easily removed. The shoe proper, or the actual sole wearing part, resembles the common shoe, and has the usual nail holes, but it is attached to the foot by an inclined spring clipping piece formed of two layers of metal, attached to the hoof side of the shoe by nails passed through the holes in the shoe body, and driven up through the space between the two layers of the clipping piece, which is inclined to suit the slope of the hoof, the lower part of which it is to embrace. It is made somewhat wider on the heel side than the actual width across the heel, to enable the shoer to spring it into its fixing position, and to accomplish this, one side only of the clipping piece is permanently attached to the shoe. The shoe can be placed on the hoof with greater facility, and when on, the extending side of the clip is sprung inwards to its proper position, and the nails on that side being driven up from below, pass through the clip and are clinched over at the top, thus binding the shoe securely on the hoof. When the shoe is to be removed, a few of the nails are drawn out and the clipping piece springs out again.

To prevent any undue play to the shoe in the contraction of the foot, a spring is applied to one side of the inner part of the clipping piece. The spring is attached by its having a pin fixed to it, which passes through and slides freely in a hole in each of the plates forming the clipping piece. In a modification of the invention, the nails to be used in the extending side of the clip are formed with recesses, and when driven in between the plates of the clipping piece, are held in position by a spring bolt or stop passing through the plates and into the recesses in the nails.

[Printed, 10*d*. Drawing.]

A.D. 1858, March 13.—N° 516.

NEWTON, Alfred Vincent.—(*A communication.*)—"Im-"proved machinery for making horse shoes."

This invention relates to an arrangement of machinery "whereby bar iron is cut into lengths bent to a horse shoe form, "and impressed between dies to complete the horse shoe in a "rapid succession of operations.

"The machine is provided with a fixed and moveable die, the "former of which is firmly secured to the framing while the "moveable die is attached to the front end of a plunger which "slides through housings in the framing. The moveable die is "the swaging surface for forming the top of the shoe; it sur-"rounds a projection or former of wrought iron extending about "two inches in front of the die, and corresponding in shape to "to the interior of the shoe.

"Immediately opposite to the front end of the plunger is fixed "the swaging face which forms the bottom of the shoe. Sur-"rounding the fixed swager face is a box plunger, which slides "through housings, and works clear of the swaging face and of "an abutment bar that supports it.

"The fixed die corresponds precisely with the shape of the bot-"tom of the shoe except where the crease and nail holes occur; "these are afterwards made by suitable appliances attached to the "interior of the hollow sliding box. The bending of the red "hot bar (from which a suitable length to form a horse shoe is "cut after every operation of the machine) is effected by levers "which slide up and down on a pair of vertical guides. At their "lower extremities these levers carry small friction rollers which "press upon the piece of heated iron, and as they descend lap it "around the central former, the compressing motion of the lower "rollers being effected by a cam piece, against which a pair of "rollers carried by the upper ends of the levers press. When "the bar is bent into the proper shape, the moving die advances "and presses it between the dies, thus shaping it on the face and "back.

"The next operation is the creasing and punching, which is "effected by the advance of the box, which completes the manu-"facture; the moving parts now retire, and the shoe is discharged "from the machine."

[Printed, 10*d*. Drawing.]

A.D. 1858, March 18.—N° 557. (* *)

BROOMAN, Richard Archibald.—(*A communication from Louis Le Febvre.*)—(*Provisional protection only.*)—"An improved "knee cap."

"This invention consists in constructing knee caps in caoutchouc, gutta percha, or some other elastic material or fabric, "with a hollow at the back to allow of the play of the joint, and "with a padding in front to prevent injury from a fall or otherwise, or from kneeling. When the knee cap is made of caoutchouc or gutta percha, alone or combined, perforations should "be made in it for the purpose of ventilation. The cap may be "formed in one continuous piece and drawn on into its place "over the knee joint, or it may be made to fasten by hooks and "eyes, buckles, or by a lacing."

[Printed, 4*d*. No Drawings.]

A.D. 1858, April 24.—N° 904.

STOCKER, Alexander Southwood.—"Improvements appertaining to articles to be affixed to boots and shoes, and to the "feet of animals, and in the machinery and means employed for "producing the same."

The second part of this invention relates to a method of manufacturing metal toe and heel pieces for boots and shoes. Slit rods are cut into lengths and bent in the ordinary manner. They are then heated to a suitable temperature in a muffle or furnace. Each article is then placed in a die fixed in a stamp, and a blow is given to it to rebend or correct its shape. It finally receives an instantaneous smart heavy blow with a steam or other hammer in a corresponding die of equal precision. The top die must be left of a convex form in order to turn out the heel hollow to fit the boot. Rolled rods may be used instead of slit rods. Solid back or bitted heels are made by filling up the backs with a bit made of steel or other metal. They are then stamped in dies. The indentations for the nail heads, &c., may be stamped in the straight bar, and the bar afterwards bent into shape. Shoes for horses and other animals may be made in the manner above described.

[Printed, 10*d*. Drawing.]

A.D. 1858, August 16.—N° 1869.

NEWTON, Alfred Vincent.—(*A communication.*)—" Certain " improvements in machinery for forging horse shoes."

This invention relates to an " arrangement of mandrils, dies, " rollers, and punches, for the purpose of forming horseshoes from bar-iron, producing the creases in the same, and " punching the holes therein; also, in an improved application " of discharging apparatus for the purpose of delivering the shoes " from the machine as fast as they are completed."

The bar iron to be converted into shoes is passed into the machine between a pair of feed rollers, to which motion is given for the purpose of conducting the bar on to a table in front of a pair of antifriction rollers. The length of bar required for a shoe is then cut off, and a mandril which slides in horizontal guides, and is formed at one end to correspond to the internal figure of the shoe, is advanced, and caused to bend the bar into the form of a horseshoe.

" In doing this, the mandril carries the bent bars between a set " of dies, the action of which is to complete the formation of the " shoe. A stationary die fixed to the bed of the machine forms " an abutment for the front part of the shoe, and two side dies, " which are capable of receiving a horizontal sliding motion, " complete with the fixed die the outer figure of the shoe. " Passing up through slots made in the bed of the machine is " a divided die furnished with projections corresponding to the " crease and the nail holes of the shoe, and situate immediately " above this, and fixed securely to a sliding block, (which slides " in guides attached to the standards of the machine), is a counter die for pressing upon the upper face of the bent bar. This " upper die is operated by toggle levers set in action by a cam on " the upper cam shaft, and a pair of cams on the same shaft " operate the side dies by means of pendant wedges, which when " raised, cause the side dies to close upon the shoe. The under " die for piercing the nail holes, is pressed up by the direct action " of a cam on a second or lower cam shaft, the rotation of which " shaft (by means of a second cam acting on the bowl of a rock " lever connected by a rod to the sliding mandril) effects also the " back and forth motion of the mandril. Situate above this " mandril, but having its bearings in the main frame of the " machine, is a rock lever, the forward end of which is forked, " while the tail end is wedge-shaped on its under side. As there-

" fore the mandril moves back from its work, it trips the forked " lever by striking against the wedge projection, and depressing " the forked end it brings the prongs into contact with the formed " shoe, and strikes it off the mandril."

[Printed, 10*d*. Drawing.]

A.D. 1858, October 18.—N° 2327.

SMITH, John.—" Improvements in rough shoeing beasts of " draught and burden."

This invention consists in the employment of a plate or ring to which clips are attached, to fit the outside of the horse shoe; by causing these clips and the plate or ring to be drawn together, roughing pieces or a snow plate are fastened tightly upon the shoe, and these prevent the feet of the animal from being clogged with snow and from slipping. The snow plate, which covers the whole bottom of the shoe, may be of an elastic material, and the roughing pieces may be formed with it or separate. The clips which fasten to the plate or roughing pieces clip round the shoe and turn " slightly under the hoof and between it and the shoe." A wedge inserted in the front clip tightens the whole upon the shoe. The roughing pieces may be attached without a snow plate by a ring or portion of a ring. The clipping pieces clip the outside of the shoe, and the ring is drawn to them by a nut and screw fitted to each clip, or they may be fixed on with a wedge, which wedge may form the roughing piece.

[Printed, 8*d*. Drawings.]

A.D. 1858, December 24.—N° 2943.

OWEN, Lemuel Dow.—(*A communication.*) — (*Provisional protection only.*)—Machine for manufacturing horse-shoe nails.

On the main shaft is fitted a self-adjusting excentric, having a chilled roller or a roller of hardened steel attached. On each revolution of the shaft, the hardened roller strikes or hammers the nail rod or iron a drawing, or sliding blow, from the head towards the point, such rod having been passed in a red-hot state between two dies; and before the roller makes another revolution, to give another such blow, one of the dies (which is moveable by means of an excentric) strikes or hammers such nail sideways; the other die, which is fixed, acts as a block or anvil. The shaft may be made to move backwards and forwards. The nail rod passes *through a holder* which has " a kind of jigger motion " to prevent scales forming on the nail rod. The required length of rod is gauged by a spring attached to the holder, and the holder and nail rod may be drawn back by cams. When the nail is formed it is cut off and finished.

It is stated that the details may be varied.

[Printed, 4*d.* No Drawings.]

A.D. 1858, December 29.—N° 2981.

GOWING, Thomas William.—(*Provisional protection only.*)—
" An improved roughing for the shoes of horses and other like
" animals.

" The improved roughing consists of nails formed with spikes
" or projecting surfaces, and with a shoulder which bears upon
" the outside or bottom of the shoe itself. In other respects the
" nails are similar to those now in use."

[Printed, 4*d.* No Drawings.]

1859.

A.D. 1859, January 28.—N° 257.

BARTHOLOMEW, George.—(*Provisional protection only.*)—
" Improvements in shoes for horses and other animals requiring
" such shoes, and in the means of attaching the same to the
" feet."

The shoe is of the usual shape " except that on each side it is
" separated from that forming the front, and the parts are con-
" nected to a stud or other elastic plate." Or the shoe may be formed in one piece, " but sufficiently thin and flexible when
" desired for the amount of elasticity sought." " These parts of
" the shoe proper" " are attached to an outer frame or wall
" rising up the hoof, and extending from the front backwards" as in No. 180 of 1858. The sides of this frame are elastic, and are fastened by a " connecting piece" behind, which bends up over the heel.

[Printed, 4*d.* No Drawings.]

A.D. 1859, February 8.—N° 351.

THOMAS, George.—(*Provisional protection only.*)—" A double-
" bottomed horse shoe."

The "invention consists of shoeing horses with two shoes on " each foot. The one shoe, or shoe proper, to be fastened to the " hoof by nails in the usual way. This shoe in the centre part is " dovetailed, so as to admit of the second shoe being placed " thereon, and the second shoe is so constructed that it will slip " into the dovetail of the first shoe, and will take all the friction " produced by the horse's travelling, and prevent the first shoe " coming in contact with the road.

"The second shoe is so formed that it can be put on and taken " off the first shoe with the greatest ease, and consequently a " horse can be roughed, if required, every day, without in any " way damaging the hoof."

[Printed, 4*d*. No Drawings.]

A.D. 1859, March 9.—N° 617.

NEWTON, Alfred Vincent.—(*A communication from William Watkins Lewis.*)—" Improved machinery for rolling horse-shoe " iron."

This invention " relates to the manufacture of horse-shoe iron " by the combination of lateral pressure with longitudinal " pressure in the rolls employed. In order to effect this object " the inventor combines in a pair of rolls, a groove and creasers, " which, by their joint operation, exert pressure in a lateral as " well as in a longitudinal direction, and thus produce by a " continuous operation, horse-shoe iron, which is concave on its " upper side, thin on its inner edge, thick on its outer edge, " creased on its under side, and gradually diminishing in width " from heel to toe, as herein-after specified.

"The rollers are divided radially and vertically, so that the " devices which give the desired configuration to the horse-shoe " iron, may be made separate from the rollers. By this means " facilities are afforded for renewing the working parts whenever " they become worn or imperfect in their operation, or whenever " it is desired to insert devices for reducing the iron to a size and " character suitable for producing larger or smaller shoes."

[Printed, 8*d*. Drawing.]

A.D. 1859, May 7.—N° 1146.

COMBE, Julien.—(*Provisional protection only.*)—" An improved " *plantoforme or* apparatus for measuring the hoofs of horses, for " *the purposes of* forming their shoes."

"The object of the invention is to give a means of accurately " and simultaneously taking all the dimensions of a horse's hoof " requisite for forming the shoe, and by a single application of " the instrument to the right or left foot, obtaining the requisite " dimensions of that foot and the other. It consists of two " blades of metal, with handles fixed together by a central pin, " on which they work like forceps or scissors; the blades are " curved outwards; on each side of each blade, and near to its " outer edge, flanges of metal are fixed, extending from the " central pin a sufficient distance along the blades to clip the " hoof. Beyond the flanges the blades are graduated on both " sides. The flanges are so curved, that one is adapted to the " outer side of the hoof, and the corresponding one on the other " blade to the inner side. Those for the outer sides of the " hoofs being on the same blade, and those for the inner sides on " the other blade. One side of the instrument is adapted for " the right foot, and the opposite side for the left. A graduated " quadrant is fixed to one of the handles, and passes through a " slot in the other. A binding screw retains the blades and " handles in any position desired."

[Printed, 4*d*. No Drawings.]

A.D. 1859, June 9.—N° 1403.

BARTHOLOMEW, George.—(*Provisional protection only.*)— " Improvements in shoes for horses and other animals."

The patentee says,—" The object of my invention is to arrange " the parts of shoes for horses and other animals that whilst they " may be securely affixed to the foot, the foot may be permitted " to have to-and-fro motion at such parts. For this purpose a " part at each side of the sole of the shoe alone is nailed to the " foot, and these parts have also side clips or walls extending up " against the side of the foot. These side parts of the sole are " connected to the front or toe piece by steel or other suitable " elastic connections, so as to admit of a movement thereto, and " the heel parts are connected in like manner, by which the to- " and-fro motion of the front and heel parts of the foot referred " to will be admitted. I also apply at the posterior parts of the " shoe a portable plate capable of being removed at pleasure, and " which, when on, acts as a guard to the heel and sole of the " foot."

[Printed, 4*d*. No Drawings.]

A.D. 1859, June 16.—N° 1453.

CUTLER, Edward Adams.—(*A communication from Charles H. Perkins.*)—"A new and useful machine for making horse "shoes."

The shoe blank is bent round a "former" made with a "beveled top surface" and a "vertical edge," by "benders." "These benders are curved arms, jointed at their rear ends," to a slider, and carrying rollers on their front ends. They are actuated by cams. Over the bed on which the "former" is fixed, is a "tripping or hammer shaft" which carries a hammer and a "creaser." After the bending the shoe is hammered, the creaser is then brought under the hammer, and the shoe hammered with the creaser. The creaser may be "provided with a small cutter "around at its toe," so as to "sever the shoe into two parts" for the use of oxen. The anvil on which the shoe is made, is formed with a projection "for hollowing the shoe or making "it concave in rear of the toe." "A set of notches or their "equivalent, are made on the former to hold the shoe blank in position. The mechanism by which the above parts of the machine are driven at proper times, is described at length.

[Printed, 10*d*. Drawing.]

A.D. 1859, June 21.—N° 1490. (* *)

GIBBS, Stephen.—(*Provisional protection only.*)—"Improvements in apparatus for slinging horses, mules, and other "animals." "The apparatus consists principally of a frame "composed of four uprights, and suitable transverse and longitudinal braces supporting a bed or sling," which is raised or lowered as required, with manger, and padded adjustable breech bars. To turn the animal for veterinary purposes, a kind of trough is added, "consisting of a floor and two side boards, in "which the animal stands," and to which its feet are hobbled. The floor is suspended on pivots, and is turned round by chains and a windlass, and "the animal turned bodily on its side." Cushions support "various parts of the animal."

[Printed, 4*d*. No Drawings.]

A.D. 1859, July 4.—N° 1591. (* *)

BROOMAN, Richard Archibald.—(*A communication from Job Johnson.*)—Powder or mixture for refining and steelifying iron. According to this invention, take quick or caustic lime, free from earthy or foreign substances, and add to it an equal quantity of bone dust or baked bones finely divided, and a like quantity of charcoal; mix these ingredients intimately, and expose them to the influence of the weather for one, two, or more days; then take any convenient form of cementing or converting furnace, and interstratify the articles of iron to be operated upon with the mixture till the furnace is charged; afterwards close and lute with fire clay, and apply heat externally. "By this means and " process I am enabled to give to iron entirely new properties and " qualities, as well as" to convert or partially convert it "into " steel at pleasure. Iron, subjected to this treatment, assumes great " rigidity and hardness without losing its property of malleability " and ductility. Amongst other articles horse shoes" "may be " finished in iron, and then converted, or partially converted, into " steel, without impairing their forms or requiring reconstruction."

[Printed, 4*d*. No Drawings.]

A.D. 1859, October 1.—N° 2228.

STOCKER, Alexander Stockwood.—" Improvements in the " manufacture of articles to be affixed to boots and shoes, and to " the feet of animals."

The "invention relates to an improved mode or method of " making shoe heels and toes, horse and other shoes for the feet " of animals, chain links, and washers of iron or other metal, " and consists in the employment for that purpose of a metal " die having the counterpart of the article intended to be produced cast or otherwise formed in or upon one or more of its " surfaces. In the manufacture of metal shoe heels, this die has " projections formed upon it for the purpose of producing the " indentations in the heel intended for receiving the nail heads, " and it is also formed in such a manner as to impart the desired " shape to the partly manufactured article which it is intended to " complete. The metal of which the shoe heel is to be composed " having been previously prepared and partially shaped by hand " or otherwise, is placed in or over the matrix or sunken part of " the die, and is then subjected to the pressure of a roller or " rollers, which are made to revolve by any suitable means, and " under or between which the die with the metal to be shaped " placed upon or in it is passed; or in lieu of rollers other suitable mechanical contrivances may be employed for exerting a

" steady and gradual pressure upon the article in or upon the
" die."

[Printed, 6*d*. Drawings.]

A.D. 1859, October 18.—Nº 2377.

REYNOLDS, JOSEPH.—(*A communication from Henry Coggshall.*)—" Improvements in the manufacture of wrought nails."

This is an improvement on a former patent, No. 1099, A.D. 1855.

" This improvement consists in making the heads of the nails
" as large as may be required, and more perfect in form, by means
" of a case or mould enclosing the end of the blank and heading
" punch on all four sides, so that as the punch advances in the
" case to head the nail by upsetting the end of the blank, the
" metal will be confined within the case, which is the size of
" the head when finished."

[Printed, 8*d*. Drawing.]

A.D. 1859, December 1.—Nº 2721. (* *)

TILL, THOMAS. — (*Provisional protection only.*)—This is an invention of machinery for forging horse-shoe and other wrought iron nails. The machine contains four slides, each carrying a hammer die, and respectively arranged to act in slide boxes radiating at right angles from a common centre. By means of cams and an arrangement of connecting rods and bell crank levers, simultaneous convergent and divergent action is imparted to the dies, which when brought together form a central space between them corresponding exactly to the form of a horse-nail. Into this space the rod heated to a welding heat is gradually inserted, and reduced to a point by the successive blows of the dies. After this operation the rod is removed to a cutter, that takes off the tapered end, and with it a small portion of the rod, just sufficient to form the head of the nail.

In machines for making rose-headed nails, five hammer dies are employed.

[Printed, 4*d*. No Drawings.]

A.D. 1859, December 8.—Nº 2786. (* *)

NORRIS, JOHN, junior, and TILL, THOMAS.—(*Provisional protection only.*)—This is an invention of machinery for the manufacture of horse and other wrought-iron nails. The machine comprises four hammer dies, which act alternately in pairs, converging from oppostie directions towards a common centre occupied by the end of the heated metal rod of nail iron, from which the nails are formed. Each pair of hammer dies acts in slides, one pair at right angles to the other, and by means of connecting rods and levers, actuated by cranks or cams, the two hammers of each pair are caused to diverge and converge simultaneously, the two pairs thus operating alternately at the central point upon the end of the heated rod. After the shaping operation of the nail, the rod is removed to a cutter, by which the desired length is cut off, including a sufficient portion of the rod to form the head.

[Printed, 6*d*. Drawing.]

1860.

A.D. 1860, January 18.—N° 127.

BARKER, George Jones, and BARKER, Thomas.—(*A communication from Henry Burden.*)—"Improvements in machinery "or apparatus for manufacturing shoes for horses and other "animals."

The improvements form the subject matter of a former patent, dated August 19, A.D. 1856. The invention consists of the following parts:—

1. The feeding and cutting apparatus is made moveable and easily adjusted, in order to diminish the amount of scrap or waste on each rod.

2. An improved method of constructing the bearings of the bending frame by placing the feeding rollers nearer to the cutters; and allowing the whole to be moved by a screw either nearer to or further from the great roll.

3. An improvement in the "throw-back lever." When the bending frame and tongue are moved forward by the lifting cams, the end of the lever resting on the bending frame is carried forward until the cams pass those on the bending frame and the bolt head or "buffer" strikes against the shaft, the cam on the shaft then striking on the steel cam on the lever, presses it down

quickly, and throws the bending frame back to its former position. A piece of india-rubber acts as a spring.

4. An improved swaging apparatus for supporting the outer edges of the shoe during its creasing consists of two side steels or swages bolted to, cycloidal shaped bevil pinion moved from the segment gearing on the great roll with teeth in the proportion of 2 to 1. While the "crease" is being made in the shoe, the surfaces of the curved edges of the "side steels" or swages, roll and press against the edges of the shoe, giving it the proper shape, and preventing the iron spreading and splitting when the shoe is creased or punched; the cycloidal shaped gearing secures uniformity of velocity and pressure to the slide steels, or swages, and edges of the shoe.

5. Another arrangement for supporting the edge of the shoes while being punched consists in making the clamps, or creasing caps, to project beyond the face of the "creasing block" and "around the creasers."

6. Teeth are made to slide on those in the pinion, and when in gear with the wheel prevent any "back lash" or "play" in the teeth.

[Printed, 1*s*. 6*d*. Drawings.]

A.D. 1860, January 19.—N° 138.

DAWES, William.—"Improvements in the manufacture of "metal shoes for beasts of draught and burden, and in the ma-"chinery, or apparatus, to be used in such manufacture."

The improved method consists in employing simpler machinery than that hitherto used, and is more especially applicable to "plate" or entire shoes which are used in some foreign countries.

The blank is produced in the usual manner from a bar or sheet of metal, from which the shoe is to be formed; and placed heated, or cold, between iron, steel, or other metal dies, wherein it is subjected to blows or pressure to produce the required configuration.

Another improvement is the application of case hardening to shoes of all kinds for animals of draught or burden; and using by preference for this purpose horse-hoof parings, bone dust, potash, and salt and water.

[Printed, 6*d*. Drawing.]

A.D. 1860, March 29.—N° 811. (* *)

NORRIS, John, junior, and TILL, Thomas.—(*Provisional protection only.*)—This invention relates to machinery for the manufacture of horse-shoe and other wrought-iron nails.

Reference is made to Letters Patent bearing date May 15, 1855, No. 1099, which were granted to G. T. Bousfield for nail-making machinery, the object of the present invention being the production of horse-nails with larger and more solid heads than the said previous machinery accomplished, by reason of the lateral expansion of the metal when pressed between two dies. To this end, according to the present invention, a bottom or gripping die is used of increased width, its face and the operating faces of the other dies, assimilating to the exact shape required for the head, which is formed by the dies in conjunction with a top shear and a forcing slide, acted upon by a heading punch. In place of a single, a compound link furnished with screw adjustment is employed in the improved machine, and a spring to prevent concussion or back-lash is attached to a lever which works the forcing slide.

For making other wrought-iron nails, the faces of the dies, the slide, and the heading punch, must be appropriately modified.

[Printed, 8*d*. Drawings.]

A.D. 1860, May 19.—N° 1236.

NEWTON, Alfred Vincent.—(*A communication from George Jaques.*)—" An improved liquid preparation of tobacco."

This decoction of tobacco in a highly concentrated form is applied to the destruction of vermin, and to the treatment of cutaneous diseases in sheep and other animals. Very strong tobacco is placed in a still and covered with water. Heat or steam is applied, and the still is run until a concentrated solution has been formed by the evaporation of a portion of the water, which is distilled over, carrying with it nicotine and volatile oils, which are condensed and afterwards collected. The solution is then drawn off from the still, and the residue pressed to extract all the juice. This is mixed with the solution, which is afterwards concentrated by evaporation. The nicotine and volatile oils which were produced by distillation may be mixed with this concentrated solution. Alcohol, or alkaline solutions, may be used in place of water.

[Printed, 4*d*. No Drawings.]

A.D. 1860, May 23.—Nº 1274.

BARTHOLOMEW, George.—"Improvements in shoes for the "feet of horses and other animals."

The improved shoe is to give freedom to the natural contraction and expansion of the bearing parts of the foot. The shoe is formed in three parts, its inside, or frame, formed of steel or other strong elastic metal, the upper part formed to the front and sides of the foot with a flange for attaching it at the bottom, and lined with leather to give easy pressure on the front and sides of the hoof; the third, or wearing part, may be of metal. As the foot of the horse bears on three parts the shoes should have "heels and "toes." When the wearing parts are worn out, they are withdrawn and replaced with new. This is performed without disturbing the size or shape of the frame, or cutting the foot of the animal to refit the shoe; the same shoe is thus used with renewed outside bearings, by which the exact bearings of the foot are preserved on the frame.

On this principle two shoes are made, one to be nailed on the foot, the other fastened by an india-rubber spring and a catch. The latter is to be used when the foot is deformed, to assist it in recovering its natural shape. When this is accomplished, the shoe with nails is to be used.

[Printed, 10*d*. Drawing.]

A.D. 1860, May 26.—Nº 1306.

DOWLER, George, and FARMER, George James.—"Im"provements in machinery for the manufacture of boot heels and "tips, coins, medals, tokens, checks, and such like articles."

"This invention has for its object improvements in machinery "for the manufacture of heels and tips for boots and shoes, coins, "medals, tokens, checks, and similar articles where dies and "pressure are employed."

The machine is made with a suitable frame and bed plate, under which is a spindle on which a fly wheel and two pulleys (fast and loose) are mounted, there is also a spur wheel working into another spur wheel, fixed on a crank shaft working a pair of slides direct from the crank through a box, in which there are screws and bolts, with friction rollers fixed in the ends for the slides to run against. The metal to be bent into the form of a heel or tip is placed in the machine, and comes in contact with the "rollers, at " the end of each slide carrying the metal round a form suited " to the size of the boot heel or tip required. At the end of the " crank shaft or spindle there is another crank which works a " shear arm or lever set over a box, which holds a fixed steel box, " through which the rod or bar passes until stopped by a gauge, " which is capable of adjustment, so that it can be set to the " various sizes required. The arm or lever with cutting tool fixed " in it descends and cuts off a suitable length from the rod or bar " of metal fed into the machine, at the same time the slides are " moved forward carrying it round the form as before described. " For the purpose of delivering the boot heel from the machine a " peg is screwed in the arm of the before-mentioned spur wheel, " which acts upon a lever fixed to the side of the machine, acting " direct upon another lever fixed on a small spindle with an arm " in the centre, the end of the arm fitting round the form, and " the peg coming in contact with the lever delivers the boot heel " from the machine in its bent state."

To press and finish in dies boot heels, tips, and similar articles, " two large side standards are cast with an arm of a length " suitable for the necessary pressure, the arms being extended " under the shaft, and carrying the chairs for the shaft. On the " shaft is placed a cam adapted to the leverage required, a lever is " used suited to the standard, which is placed on a spindle or " gudgeon pin, placing the lever between standards in two journals " in the standards for that purpose. Two glands are placed under " the gudgeon pin, with two holes suited to those in the standards. The pins are then put through, and the nuts screwed " on carrying the weight of the lever, a box and bolt are then " placed in front of the standards under the head of the lever." A die is then placed under the bolt "which descends upon the " die," and strikes out the article required. Among these articles " horse-shoe blanks" are mentioned.

[Printed, 1*s.* 10*d.* Drawings.]

A.D. 1860, June 25.—N° 1545.

TRUMAN, Edwin Thomas.—(*Provisional protection only.*)— " Improvements in horse-shoes."

The object of this invention is "to alter or add to the shoe, in " such manner, that nails may be dispensed with wholly, or in

“ part.” The shoe is formed with shaped irons, which are caused to fit over, or upon the hoof: and to ensure them a bearing surface, a stratum of gutta percha, or other plastic material or composition is applied on all parts.

[Printed, 4*d*. No Drawings.]

A.D. 1860, August 31.—Nº 2103.

STOCKER, Alexander Southwood.—“ Improvements in the “ manufacture of horse-shoes.”

The improved method consists in combining a part of ordinary wrought iron, and a part of steel iron, piled, faggoted, welded, and rolled together in the same bar, which will be harder and tougher than that usually made into horse-shoes. The process is very simple. One or more bars of wrought iron are laid upon one or more bars of steel iron, forming a convenient pile which is placed in an ordinary heating furnace, and when it has attained a suitable welding heat it is taken thence and passed between rolls, and rolled into a bar of dimension and form suitable for the kind of horse-shoe to be produced ; or the pile is formed of alternate layers of steel iron and iron, or billets, piles, slabs, or other convenient pieces and forms of steel iron only. These are to be heated and rolled into bars.

Some of the bars are thickened at places agreeing with the toes and heels, of the shoes, some are seated, and some are formed of suitable section, configuration, or pattern.

[Printed, 4*d*. No Drawings.]

A.D. 1860, September 14.—Nº 2227. (* *)

TILL, Thomas.—(*Provisional protection only.*)—This invention of machinery for making wrought-iron nails is more particularly adapted to the manufacture of horse-shoe nails. The machine comprises two top and two side hammers, which by means of cams and springs act upon two heated rods introduced by the hand of the operator into the machine, through grips sliding in grooved beds. After the two side hammers have operated upon a portion of the extreme ends of the rods supported against a central anvil die, the latter is withdrawn, and the top hammers come into operation upon the partially formed nails, which are then supported by a bottom anvil die. When in turn the top hammers have operated upon the end portions of the rods, two cutters advancing are struck by a projection on the end of each top hammer, and by them the two nails are thus severed from the rods. The hammers, forced back by cams, are actuated by the reaction of springs; an adjustable gauge at the back of each cutter determines the length of the nails, and their shape is produced by the forms of the dies on the anvil and hammer faces.

[Printed, 8*d.* Drawings.]

A.D. 1860, October 9.—N° 2444. (* *)

SNELL, William.—(*A communication from Amos Whittemore.*)—This invention relates to machinery for making horse-shoe nails. The machine contains two hammers carried by a sliding frame, and having alternate action, one acting upon and the other at the side of a vibrating anvil which carries the dies; these dies are respectively grooved and fashioned, one to form the body of the nail and the other the head, as the hammers in rapid succession fall upon the heated metal rod, the end of which after the head and shank are formed, is drawn out or beaten to a point as the anvil is forced back by a cam. When this part of the operation is completed, the anvil is relieved and drawn back by a spring, and the nail is cut off to the required length by shears, which are brought forward by a cam, and afterwards fall back into position in readiness for the next operation.

A furnace for heating four rods alternately may be placed contiguous to the machine, or it may be placed in such a position, that one rod gradually drawn through will in the heated state feed the machine at the required speed.

[Printed, 10*d.* Drawings.]

A.D. 1860, October 29.—N° 2646.

STOCKER, Alexander Southwood. — "Improvements in
" the manufacture of horse and other shoes, and in the machinery
" or apparatus to be employed therein, part of which improve-
" ments are also applicable to metal boot heels and various other
" articles."

These improvements relate to the manufacture and forming of iron, steel, steel iron, steel and iron, and steel iron and iron, by rolling either of these metals alone or in their amalgamated or combined state, into certain shapes and configurations necessary for horses and other shoes, metal boot heels, and various other articles. In making a Scotch heel tip, one of a pair of rolls like those used for rolling iron is cut or sunk to produce a series of moulds or dies of the shapes required. Into these recesses or moulds the metal is forced by the pressure of the opposite roll in its revolution. The different articles thus formed in the several moulds upon the surface of the roll are held together by a thin web or waste of iron which is afterwards cut away by clipping tools fixed in a fly or other press. After the articles have been clipped from the web, they may be finished in any ordinary manner. These tools are formed of malleable cast iron, and are used in their hard unannealed state. The process saves great labour, time, and expense. The rolls may be of solid metal.

[Printed, 4*d*. No Drawings.]

A.D. 1860, December 1.—N° 2951.

MARSDEN, Robert, and LAMBERT, William. — (*Provisional protection only.*)—" An improvement in horses' shoes."

This invention relates to roughing horse-shoes in a speedier and more efficient manner than heretofore, and without detaching the shoe from the foot. The toe of the shoe is formed with a projection on its outer side, in which projection is a dovetail groove to receive a wedge-shaped piece of steel or other metal that is driven in by a hammer. One or both heels may have like projections, grooves, and roughing pieces. When roughing is not required, the pieces may be detached, and the shoes used as ordinary shoes.

[Printed, 4*d*. No Drawings.]

A.D. 1860, December 3.—N° 2966.

THRELFALL, Joseph, and AUSTEN, John.—(*Provisional protection only.*) — " An improved method of roughing horse-" shoes."

The invention consists in fixing to the fore part of horse-shoes a plate carrying spikes or other projections. The inside of the plate carries a bar which is inserted between the inside of the shoe and the foot of the horse. The front of the plate is turned up, and has fixed to it by a pin joint a bar or lever, which lies down over the toe and on the front of the hoof. The top of the bar or lever is fixed to a metal stirrup, which is passed round the heel and brought up over the top and front of the hoof.

[Printed, 4*d*. No Drawings.]

1861.

A.D. 1861, January 4.—N° 26.

DOUGLAS, James Richard Alexander.—(*Provisional protection only.*)—" An improved mode of roughing the shoes of " horses and other animals to prevent them from slipping in " frosty weather."

In the improved method of roughing, a hole is made through that part of the heel of the shoe which projects behind the hoof or foot. One of these holes may be made on each side of the shoe, and they should be formed at the same time that the nail holes are made in the shoe, which, with the exception of the additional hole, will in no respect differ from an ordinary horseshoe, and is secured to the foot of the animal in the usual manner.

In frosty or slippery weather a steel headed pin, stud, spike, or nail is to be inserted in each additional hole, and its shank clenched down to retain it therein. The projecting steel head will form an effective roughing. The spike, nail, or pin may be unclenched and removed without taking off the shoe.

[Printed, 4*d*. No Drawings.]

A.D. 1861, January 30.—N° 251.

BOUSFIELD, George Tomlinson—(*A communication from Rollin Austin Goodenough.*)—" Improvements in the manufacture " of shoes for horses and other hoofed animals."

This improved shoe is formed with a projecting ridge on the under side immediately beneath the crust of the hoof. Across this ridge is a series of perforated depressions which receive the nails and protect their heads. " When the shoe is applied to the " foot, the weight of the horse is sustained immediately beneath " the crust of the hoof by the indented ridge; and as the indented " ridge extends round the hoof, it distributes the blow in stepping " to the whole of the crust, instead of to three points only, as the " ordinary triple cork shoe does; it also prevents slipping, affords " a support for the horse, and does not permit the foot to rock " sidewise." Each depression furnishes a socket for a nail head, and prevents its being broken off.

In one modification of this invention, the indented ridge is combined with a continuous inner ridge. Clips may be used to take the lateral strain off the nails. In another modification there is a second indented ridge on the inner edge of the shoe. The shoes may be formed of malleable iron or hard brass.

[Printed, 6*d*. Drawing.]

A.D. 1861, February 9.—N° 327.

WITHERS, Hicks.—" Improvements in horse-shoes."

These improved shoes allow the expansion of the foot during motion, and tend to preserve the foot in its natural shape, which prevents diseases. After fitting an ordinary shoe to the foot, four clips are turned down, two at the toe, and two at the sides. The nail holes at the toe, one on each side of the toe clip, are countersunk. The bevelling is not continued all round the sole surface, but the toe portion is left flat. The shoe is divided on the inner or outer side of the toe, somewhat in the form of an inverted **V**, the upper division being slightly curved. The heels are shortened and gradually narrowed in the web.

[Printed, 6*d*. Drawing.]

A.D. 1861, March 5.—N° 563. (* *)

NEWTON, Alfred Vincent.—(*A communication from Benjamin A. Mason.*)—This is an invention relating to " machinery for forging horse-shoe nails, spikes, and other like articles." The machine described carries four hammer dies on a vertical plane; these dies act alternately in pairs, the dies of each pair being disposed in radial lines intersecting at right angles a common centre, the two dies of each pair striking simultaneously upon the opposite side of the nail or article in process of manufacture. The end of a metal rod, out of which the nails are formed, is gradually introduced at right angles to the plane of action of the dies at their central meeting point by a horizontally grooved feeding slide, and after each successive operation the slide is drawn back, and the nail is cut off at a regulated length by a vertical cutter. The alternate convergent and divergent motion of each pair of hammer dies is imparted to them by a revolving cam, the path in which is suitably formed to cause the dies to act simultaneously on opposite sides of the nail.

Other suitable means may be employed for actuating the dies.

[Printed, 8*d*. Drawing.]

A.D. 1861, March 22.—N° 728.

SWINDELL, Charles Evers, RUSSELL, Joseph, and PRICE, Joseph.—" Improvements in the manufacture of horse " nails."

" Our invention consists in the use or application to the partial " manufacture of horse nails of a fixed hammer, commonly called " an oliver, worked by means of the foot in connection with a " suitable die or dies, by which means we are enabled to partially " form horse nails with great rapidity and uniformity of size in " the head part, leaving the body or shank of the nail to a subsequent process of finishing, hammering, or drawing out to the " length and size of nail required."

[Printed, 7*d*. Drawing.]

A.D. 1861, April 5.—N° 842.

EDWARDS, William.—(*Provisional protection only.*)—" Improvements in the manufacture of shoes for horses and other " beasts of draught and burden, and in the preparation of the " metal to be used for this purpose."

The shoes are made of iron and steel rolled together, so that the wearing parts or surfaces of such shoes will be of steel, and the remainder of iron.

[Printed, 4*d*. No Drawings.]

A.D. 1861, May 8.—N° 1161.

MASSIAUX, Jean Thomas.—" The improvements relate to " the manufacture of cut nails or brads, viz., such nails as are " manufactured by being cut off from suitably rolled iron or " metal plates by means of suitable cutting presses, and which " are afterwards headed by suitable pressers or dies." These pressers are applied on the " presser block," by which the nail blank is formed, and driven towards each other in a horizontal direction, so as to take hold between them of the top part of the blank of the nail, and being " provided with an eyehole," they press this part into the shape required for the head. By the conical shape of the " eyehole " " the upper portions of this head " are driven towards the base of the latter, and at the same time " the vertical blow of the heading die finishes the nail."

For manufacturing horse-shoe nails the nail plate has one or two "flanches," and a knife is provided which cuts the "diamond "point" "to the blank," so that no further hammering is needed.

[Printed, 8*d*. Drawing.]

A.D. 1861, May 31.—Nº 1361.

BROOMAN, Richard Archibald.—(*A communication from Pierre Thiry.*)—(*Provisional protection only.*)—"An improved "apparatus to be applied to the shoes of horses and other shod "animals to prevent them from slipping in frosty weather."

The apparatus consists of two principal parts, one extending across the foot, the other, termed the toe clip, from the toe backward, to unite with the cross piece. The ends of the cross piece embrace the shoe on each side. In a hollow boss or collar in the centre of the cross piece, a tapped nut is fitted in such a manner as to be turned in the collar without becoming detached therefrom. The toe piece terminates at front with a projection that clips over the toe of the shoe and front of the hoof; it is threaded at the end, and enters the threaded nut. The cross and toe pieces carry spikes projecting downwards, which give a good foothold for the animal on slippery roads. After applying the cross and toe pieces, and engaging the thread in the nut, the nut is turned and fixes the apparatus.

[Printed, 4*d*. No Drawings.]

A.D. 1861, July 3.—Nº 1689.

BENNIE, James, and MOFFAT, William.—(*Provisional protection only.*)—"Improvements in the manufacture of heels, clog-"irons, horse-shoes, chain links, and similar articles, and in "apparatus therefor."

The heel is made out of a rod, by preference red hot, which is placed in the first bending or shaping apparatus against a stop, whilst a proper length is cut off by shears or other cutting tools. The blank being in position to be acted on by a sliding shaper, this in coming forward bends the two ends of the blank round a stationary block or die shaped to form the underside, and with its middle portion projecting upwards, and forming the inner edge of the heel. The outer edge and top surface are formed by the sliding shaper, which also holds the blank down on the block. At its extreme points the sliding shaper is fitted with antifriction rollers, which coming against stationary inclined planes bend the extreme ends of the heel blank slightly inward. Before the heel is removed from the block, nail holes are punched in it by means of a descending lever head or block fitted with punches, the slide ing shaper and fixed block being formed to admit this punching action. The sliding shaper is then "moved back, and the heel is " lifted off by points projected up through holes in the block," and is finally placed on a convex bedding block, and struck by a corresponding concave hammer head, or the block may be concave and the hammer head convex.

"The different movements of the apparatus may be arranged to " be effected by hand levers or screws, or they may be derived " from crank eccentrics or cams on a rotating shaft or shafts, and " the machinery may be entirely actuated by steam or similar " motive power."

[Printed, 4*d*. No Drawings.]

A.D. 1861, August 6.—N° 1955. (* *)

DAMOISEAU, Alcidalis Auguste Romain.—" Improve- " ments in apparatus for drawing blood or other fluids from the " human or animal body." These are, " a suitably constructed " cupping glass or glasses in combination with an air pump or " other similar apparatus, and arranged in such a manner that " an alternate lifting and depressing, or expanding and con- " tracting of the skin of that part of the body to which the said " cupping glass or glasses are applied is to take place, with the " object of preventing the choking up or obstruction of the pores, " scarifications, or other capillary openings through which the " blood or fluids to be abstracted from the body are to flow into " the said cupping glass or glasses."

[Printed, 8*d*. Drawing.]

A.D. 1861, August 10.—N° 1993.

STOCKER, Alexander Southwood, and STOCKER, Alexander Richmond.—" Improvements in the manufacture of " horse-shoes, boot heels, wheel tyres, rails, and safes."

The above-mentioned articles are manufactured out of bars and plates of metal prepared in the following manner :—

Puddled bars or plates of wrought iron are placed in the ordinary converting furnace, and are operated on in the manner generally used when converting iron into steel. These bars and plates are intended to be only partially converted. The inner part of the metal is left in a fibrous condition, the outer surface or surfaces being hardened to a greater or less depth as circumstances may require. They are then formed into a pile, heated to a fusing or welding temperature, and passed through an ordinary rolling mill, whereby the whole becomes incorporated, and rolled out to dimensions requisite for the purpose intended. To give bars of metal employed for horse-shoes a better shape, they are passed between the rolls with their flat sides in a vertical instead of horizontal position, and by this method the prepared bars have a uniform thickness. With a view to allow an extra quantity of metal at those parts which will correspond to the toes of the shoes when manufactured, the width of the bar is increased at such parts by making a corresponding depression or increasing depth of the grooves at the proper places, so that the bar will have a varying width but a uniform thickness.

[Printed, 4*d*. No Drawings.]

A.D. 1861, September 17.—N° 2319.

DAVIES, George.—(*A communication from Charles Alexandre Louvrier.*)—"Improvements in machinery, or apparatus for the "manufacture of horse-shoe and other nails."

An apparatus by which horse-shoe and other nails are rolled, or forged, simultaneously Two sectors serve the purpose of rolls, which form the stem or body of the nail, drawing it out to the required dimensions; its head is formed by a punch. The two sectors, mounted on pivots, are caused to oscillate, and their rolling surfaces are formed to roll the body of the nail. Two sliding hammers are placed at right angles to the former, working one against the top of the lower sector, and one against the bottom of the upper sector, enclosing a rectangular space between the four surfaces. One of the sectors has a lateral motion, whereby it follows the movements of the hammers as they approach and recede from each other; a rod of iron placed in the quadrangular space is slightly reduced, and held between them while the punch forms the head of the nail. The rolling movement of the sectors forms the stem or shank of the nail. The sliding hammers are opened and closed rapidly by a cam, and squeeze and forge the iron in the reverse direction. Any required numbers of blows may be given by these hammers during one rolling movement of the sectors.

[Printed, 8*d*. Drawing.]

A.D. 1861, September 20.—N° 2360.

BOUSFIELD, George Tomlinson.—(*A communication from Edward Adams Cutler.*)—"Improvements in machinery for manufacturing shoes for horses and other animals."

There are two general methods for making shoes for animals by means of machinery; one by rolling or compressing a bar of iron into the proper form, the other by hammering the bar and drawing it into the form of a shoe by a succession of blows similar to the operation by hand labour. In the machine constructed according to this invention, the movement commences by placing the "blank" properly from which the shoe is to be made; the "benders" move forward, and bend the blank round the "former." The prop to the hammer helve being removed, the "platting hammer" falls upon the blank, and the helve coming within range of the tappets on a "three-armed tappet "wheel," called a "wild cat," the hammer is worked as long as needful; the helve is then caught and held by the prop. A sliding carriage then shifts the "creaser hammer" to the place just occupied by the plating hammer, which is disconnected from the helve and deposited on a platform; the prop to the helve is withdrawn again, and a blow struck by the creaser hammer upon the blank the "wild cat" causes the blow to be repeated, the flexible standard is sprung aside, and the helve blocked up, the "sliding carriage" returns to its first position, disconnects the creaser hammer from the helve; the prongs of a rod cant up the heels of the shoe, and this enables the scraper to carry off the shoe, as the sliding bar returns to its first position. The machine is now ready to repeat these movements.

[Printed, 3*s*. 10*d*. Drawings.]

A.D. 1861, October 9.—N° 2520.

DAVIES, George.—(*A communication from Thomas Randolph Taylor.*)—"Improvements in machinery for manufacturing shoes "for horses and other animals."

Connected with shafts on the main framing are two horizontal mandrils in a line with each other, capable of sliding longitudinally in fixed guides. At their inner ends these mandrils are fitted with dies, one being a male die, the form of the transverse section of which corresponds with the desired form of the interior of the shoe, and has square projections, one on each side, below the point corresponding with the heel of the shoe; the other a female die, the inner side of which is formed to fit the exterior of the former, and has at its lower part two recesses (one on each side) opposite to the projections on the other die, and also a taper recess at the top where the toe of the shoe comes. The former are to turn the back caulks of the shoe, and the latter to form the toe caulk or tip. The end or face of the female die has projections on it which form the grooves and nail prints in the shoe.

These two dies have a reciprocating motion, the female die having a regular motion, and the male die an intermittent one.

There is a slide so arranged as to work vertically in guides, and in its lower part is an opening through which the male die freely passes. To the outer face of this slide are attached two jaws, each furnished with a recess of the form of one half of the exterior of the shoe, so that when the said jaws are closed upon the male die and the two dies are brought to the proper distance apart, their four surfaces combine to form a mould of the desired form of the shoe. The jaws are kept apart by a spring, and brought together by their lower ends (which are wedge-shaped) coming between two bevilled projections on the frame each time the slide descends.

The portions of the jaws which contain the recesses project some distance in front of the lower portions.

The machine is provided with a suitable cutter for cutting the iron off into proper lengths to form a shoe.

[Printed, 8*d.* Drawing.]

A.D. 1861, December 5.—N° 3047.

CARR, ALLEN THOMAS.—(*Letters Patent void for want of Final Specification.*)—" The addition to horses' shoes of certain material " to prevent slipping."

Cocoa nut fibre, or any other fibre sufficiently strong to bear the pressure of a horse's foot, is made, by plaiting or otherwise, into the shape of a horse-shoe. It is then applied " to the ground or " wearing surface of a shoe on a horse's foot," and is secured in that position by wires passed round the shoe, and the whole, or portion, of the layer of fibre in several places. To facilitate the application of this layer of fibre, the shoe should be formed with transverse recesses across that surface of it in contact with the horse's foot, through which recesses the wires for securing a layer of material to the shoe may be passed.

[Printed, 4*d*. No Drawings.]

A.D. 1861, December 9.—Nº 3085.

SILVER, STEPHEN WILLIAM, and PRINGLE, HALL.—(*Provisional protection only.*)—" Improvements in shoes for horses and " other quadrupeds."

This invention consists, first, in manufacturing shoes for quadrupeds entirely of ebonite or vulcanite, alone or mixed with metal filings or particles of metal, or with gritty material, to give hardness and durability to the shoe; second, in lining shoes as at present made with vulcanite or ebonite to prevent the jar to the feet of the animals; and third, in forming shoes, whether of iron, and lined or not, with one or more joints to allow of the natural lateral expansion of the hoof.

[Printed, 4*d*. No Drawings.]

A.D. 1861, December 24.—Nº 3219.

EDE, EDWARD.—(*Provisional protection only.*)—" Improvements " in the construction of horse-shoes."

"This invention relates to the construction of horse-shoes of an " improved form, and by the use of which greater security of " footing is obtained." They are manufactured from a flat bar with a ridge along the centre of one surface. In the manufactured shoe the ridge, of course, is on the under or wearing surface.

[Printed, 4*d*. No Drawings.]

1862.

A.D. 1862, January 11.—Nº 82.

CHARLTON, HENRY.—" Improvements in the manufacture of " certain kinds of shoes for mules and horses."

The invention relates to the manufacture of shoes of the kind generally used in South America for mules and horses that are employed for transporting merchandise. These shoes have a sharp outer edge, and have large headed nails driven into them to give the animal's feet a firmer hold of the surface he has to travel over.

"It consists in shaping by rolling bar iron from which shoes " of the kind described are manufactured, instead of shaping the " said iron by hand forging as is ordinarily practised, and cutting " or piercing the whole of the rectangular holes or more than one " of them, in the partially made shoes at one operation by the " use of a direct-acting press."

[Printed, 10*d.* Drawing.]

A.D. 1862, March 1.—N° 567.

KENDALL, Josiah Bradlee.—" An improved horse-shoe."

This is a compound or duplicate horse-shoe, one part which is secured to the hoof by nails, and intended to be removed only when the growth of the foot renders it necessary. The outer or supplemental shoe is removeable, and has calks to prevent the horse from slipping. The permanent shoe has a uniform thickness with the web, wider at the toe than at the heels. It is nailed to the hoof, and the nail-heads are countersunk into the face of the shoe and left flush with its outer surface. Holes are drilled in it to receive "steady pins," and other holes are cut with a female screw to receive the screws of the calks. The outer or supplementary shoe has a toe calk and two heel calks formed with the shoe. Holes are punched through it corresponding with the screw holes in the upper shoe, and "steady pins" project from its upper surface, one at the toe and one at each heel. Steel "spur calks" are used, each one having a shank with a screw, at the end which goes into the permanent shoe. The outer shoe is then applied to the permanent shoe, which is already nailed to the hoof, and the "spur calks" are screwed up tight, thus binding the two parts firmly together. The "steady pins" of the under shoe fit into the holes made for them in the permanent shoe, and take the strain off the "spur calks."

[Printed, 8*d.* Drawings.]

A.D. 1862, March 4.—N° 587.

STANDEN, Bridge.—"Improvements in the preparation or " manufacture of portable manure or fertilising compound, and " in the collection or extraction therefrom of a certain liquid appli-

" cable to various purposes, and also in machinery or apparatus " to be employed therein."

This invention relates to improvements on a former patent, and has for its object the conversion of matters, such as night-soil or sewage, into a portable substance freed from offensive odour and valuable as a manure, and also to the prevention of effluvia from collections of such matter. A liquid collected by condensing the steam arising from the process of manufacture is also utilised.

The excrementitious matter is collected in boxes which are placed in a covered van for conveyance to the works, so as not to be offensive. The said boxes and their contents are hoisted to a platform and emptied into stone tanks, a number of which are connected together by a pipe which leads to a neutralising tank, and from thence to a series of stills. Each of these stills has an "agitator," and the contents after distillation are removed to evaporating pans, and thence to mixing machines to be incorporated with ground ashes and cinders which are burnt in a retort to remove the deleterious gases.

The steam or vapour from the stills is condensed into a suitable vat or vessels. This liquid may be employed, amongst other uses, as a sheep wash.

[Printed, 1*s*. 8*d*. Drawings.]

A.D. 1862, March 14.—N° 701.

QUINARD, Alexandre.—"A machine for manufacturing " horse-shoe nails."

The apparatus is supported on a cast iron table fixed on a wooden frame, the main shaft is moved by a pulley, and a fly wheel regulates and lessens the shock at each revolution.

The iron from which the nails are to be cut is first rolled in a platting machine, it then presents itself between two presses; a knife advances and cuts it into lengths. The nail after being cut, descends between the two presses, which then nip it. One of the presses is fixed, and has a groove that holds a tool which carries the shape of the side of the head of the nail; the second press is held by slide bars that pass between supports; the nail is struck at the same moment by a hammer that passes between guides. The principal piece is pierced, and receives a second hammer, which carries the shape of the head of the nail; this piece is regulated by a screw. A large bent spring is placed behind the knife, arrests the iron presented, and regulates the cut. Nails are thus obtained without defect, and the malleability of the iron is entirely preserved.

[Printed, 10*d*. Drawings.]

A.D. 1862, March 15.—N° 721.

DE LA HAYE DE BARBEZIÈRES, Sublime Napoléon.—" An improved construction of horse-shoe."

This invention relates to the construction of an expanding shoe furnished with roughing pins, which shoe may be readily applied over the ordinary shoe.

This improved shoe has one of its quarters hinged at the side to allow of its opening and fitting on to the ordinary shoe. At the heels are "lugs" to receive a screw bolt, by tightening which the clamps on the overshoe will grip the ordinary shoe, and retain a firm hold of it.

[Printed, 8*d*. Drawing.]

A.D. 1862, March 17.—N° 728.

STOCKER, Alexander Southwood, and STOCKER, Alexander Richmond.—" Improvements in the manufacture and " construction of metal boot heels and tips, and horse-shoes."

The invention relates to the manufacture of metal boot heels and tips "by rolling or otherwise forming the rods of iron out of " which they are to be made in such manner as to cause them " to be indented or of uneven surface or surfaces on those sides " which have hitherto been rolled and used in a plain state, and " in bending and countersinking such or other heels and tips, " and the tools to be employed therein; also in the manufacture " of horse-shoes by the employment of certain dies cast, sunk, or " otherwise constructed, in such manner and of desired configu- " ration, into which iron or other metal having been beforehand " properly prepared is intended to be forced or pressed, which " by the aid of such dies and the pressure applied thereto, and " the article to be made, will cause the one crude metal to take " the formation intended, any surplus web or waste attached to " the shoe beyond its proper form being removed by the aid of " clipping tools, as is well understood in the trade."

The main framing of the machine, is "placed at an angle of about 30° of inclination. The main driving shaft is provided with ordinary fast and loose driving pulleys and a fly wheel. A crank in the centre of this shaft gives motion to an adjustable connecting rod, which is coupled to a slide working in a dovetail groove in the top of the bed plate. A shaper, consisting of a raised block of the contour of the article to be bent, is secured to the upper end of "a square shaft or verticle sliding bar," and projects slightly above the surface of the horizontal slide, but is held down or prevented from rising until required, by the weight suspended from the lower end of the vertical bar. Two horizontal bending rollers are made to move towards each other at the desired period by inclines, which are attached to a cross piece or carrier, secured to the under side slide. In bending a heel tip by this machine, a straight bar of the proper length is placed with one end against the stop or gauge, and with its edge against the peripheries of the two bending rollers. The slide is now made to advance so as to bring the shaper against the centre of the bar, forcing it between the rollers, the effect of which is to bend the two ends of the bar round the curved portion or edge of the shaper. At this stage the two rollers advance slightly, being forced inwards by the action of the inclines upon the antifriction rollers in the outer ends of the slides. This movement of the bending rollers causes the ends of the partially formed heel to be pressed against the narrower end of the shaper, and so completes the shaping of the heel. The release of the bent heel tip is effected, by causing the shaper to rise above the surface of the slide, so as to leave the tip free, which then descends by its own gravity along the inclined surface of the slide, and drops down an aperture, whence it is discharged through the bed plate into any convenient receptacle.

There is a die provided with countersinking projections in such positions as to " guide the workman when holding the shoe, and " enable him to make the perforations in accordance with the " peculiar formation of the horse's foot. It is desirable when " making hind shoes that the top or pressing die should be flat " on its pressing surface, but this form is of course liable to " variation according to the particular kind of shoe required."

[Printed, 10*d*. Drawing.]

A.D. 1862, April 21.—N° 1160.

TOLHAUSEN, **Frederick**. — (*A communication from Paul Eugéne Clément.*)—(*Provisional protection only.*)—" An improvement in horse-shoes."

To render horses less liable to slip in frosty weather, a suitable number of holes are tapped in their shoes to receive screw points, that is to say, conical or pyramidal spikes, having a screwed portion and a square for screwing them into the horse-shoe. The points can be taken out in summer time, and the screw holes fitted by screws, the heads of which come flush with the horse-shoe.

[Printed, 4*d*. No Drawings.]

A.D. 1862, April 22.—N° 1168.

PUTNAM, SILAS, SAFFORD.—" Improvements in machines " for forging horse-shoe nails and other articles."

The bar of iron from which the nail is to be made, is subjected to the action of four hammers simultaneously, moved by springs, these springs being put in action by a cam. A cutter is then brought down on the nail by a lever worked by hand, and the completed nail severed from the bar. This lever at the same time checks the action of the cam, so that the stroke of the hammers is arrested. A compensating arrangement is described by which the hammers are forced to strike simultaneously. The claims are,—

A hollow disk with cams for operating the hammers. The method of operating the cutter by the lever. Interrupting the action of the hammers which open. Regulating the throw of the hammers by a supplementary spring. The employment of a gauge between the hammers to measure the nail. The arrangement for catching and holding the hammer. A vibrating table to move the nail rod. A rod for catching and carrying the finished nail away from the cutter.

[Printed, 1*s*. 8*d*. Drawings.]

A.D. 1862, May 27.—No. 1593.

MOSS, DENNIS TOPHAM.—(*Provisional protection only.*)—" Im- " provements in fastening horse-shoes."

To each shoe two thin metal straps are applied. One end of each is fastened to the forepart of the shoe some distance apart. Their point of crossing is on the front and between the top and bottom of the hoof. The ends of the straps are fastened by screws which have their ends riveted or upset. At the heel of each shoe, opposite the inner and outer quarters of the hoof, there are two lugs or plates which rise to the upper part of the hoof, and one of them works on a hinge joint. They have holes through them at their upper ends through which short tubes, fixed to the back ends of the metal straps, pass. These tubes are formed with female screws which receive male screws with spreading heads, by which the ends of the metal straps are retained in their position. These short tubes hold the ends of an india-rubber strap at the back of the hoof. The holes through the strap are strengthened with metal eylet holes.

[Printed, 4*d*. No Drawings.]

A.D. 1862, June 3.—N° 1673.

BIERS, John, the younger.—" Improvements in shoes for horses " and other animals."

The under surfaces of the shoes are formed with projections at intervals. These projections are formed by indenting, which leaves them hollow. The shoes are extremely strong, and at the same time comparatively light. In place of the upper surfaces of shoes being as heretofore, when made with projections or roughings on their under sides, they are made with indents or cavities opposite where the projections are produced on the under sides, so that the projections are hollow on the upper surfaces of the shoes forming undulations or corrugations, by which means shoes are made extremely strong. To fasten such shoes to the feet, the outer edges of the upper surface of a shoe are made to fit against the under surface of the outer edges of a hoof. The corrugations of the metal do not proceed to the outer edges, but stop short, to leave a sufficient width to fit against a hoof and receive the nails. On the under surface a groove or channel receives the heads of the nails.

[Printed, 10*d*. Drawing.]

A.D. 1862, June 28.—N° 1894.

MENNONS, Marc Antoine François.—(*A communication from Louis Rupert Wachter.*)—" Improved apparatus for the " prevention and reduction of synovial and other swellings or " tumours in the limbs of horses."

" This invention consists in the substitution, as hereafter de- " scribed, of elastic moulds or sheaths to the non or semi-elastic " bandages in leather, webbing, flannel, and similar materials,

" at present generally applied to the prevention or treatment of " swellings and tumours on the knees, houghs, shanks, and " fetlocks of horses."

The bandage is moulded to the shape of the limb, and has, inside, a series of projecting cushions corresponding with the hollow of the joint, which being thus filled up partake of the general pressure of the apparatus.

The bandage has thickened seams or ribs to receive eyelets. Instead of being laced, the bandage may be fastened by straps and buckles.

[Printed, 8*d*. Drawing.]

A.D. 1862, July 22.—N° 2089.

PAYNE, GEORGE.—(*Provisional protection only*.)—" Improve- " ments in horse-shoes."

A number of transverse grooves, channels or indents are formed across the under or bearing surface of the shoe, so as to leave alternate hollows and projections, and " the nail holes are made " in the thicker or projecting portions and thus obtain a firm " hold of the shoe."

[Printed, 4*d*. No Drawings.]

A.D. 1862, September 5.—N° 2456.

WELLS, WILLIAM.—(*Provisional protection only*.—" Improve- " ments in horse-shoes, and in the method of fastening the same " to the hoofs, without nailing them, or injuring the hoof or foot. A plate, or false shoe, of malleable iron of the size and form of the hoof is pierced with holes corresponding to those in the shoe, which is nailed to this plate, and the ends of the nails are turned over and broken off, thus securing the shoe to the plate. The plate has side clips, and a toe clip pierced with a hole. The back of the plate has a metallic strap, on one side of which is a stud and on the other a boss, through which a screw passes. This screw works into a nut on a band passing from the lower part of the heel round the upper and front part of the hoof; the other end passes over the stud before-mentioned. When the screw is actuated, the plate, band, and a hook, that passes down from the band to the front of the false shoe, are simultaneously tightened, and the plate secured to the foot. Instead of a hook the band may have a boss tapped with a female screw; the screw passing from the toe of the plate into the boss, thus securing the plate and shoe to the foot.

[Printed, 4*d*. No Drawings.]

A.D. 1862, October 30.—N° 2935.

HASELTINE, George.—(*A communication from Jehu Brainerd and William Burridge.*)—"Improvements in horse-shoe ma-
"chines."

In this machine the heated iron is placed in front of a mandril, and there cut by shears to the proper length. The mandril is forced between a pair of jaws, having at one end the shape of a horse-shoe, and pivoted at the other to the bed-plate of the machine. These jaws permit the mandril and shoe to pass between them, and are then forced back by springs. The shoe is then passed to another part of the machine, where it is pressed between dies to finish it. The upper die is pressed down on it "with "a rolling motion" from toe to heel, so that any superfluity of metal is driven towards the heels.

[Printed, 8*d*. Drawing.]

A.D. 1862, December 1.—N° 3218.

COPPARD, John.—(*Provisional protection only.*)—"An ap-
"pliance or appliances for horse-shoes, to produce the effect of
"what is termed 'roughing.'"

A metal "clamp" of the size and shape adapted to the toe of a horse-shoe, is so formed that one part shall fit in between the shoe and the hoof at the "toe," the other part being turned up in front with flanges, eyes, or catches, and further secured to the hoof by a strap or india-rubber band. The clamp has projections, or a roughened surface formed of steel or hard metal to give a foot hold. Packing is introduced between the hoof and the clamp.

[Printed, 4*d*. No Drawing.]

1863.

A.D. 1863, January 19.—N° 158.

NORTON, Charles.—(*Provisional protection only.*)—"A new
"or improved method of roughing horses."

A piece of iron of a fitting size and length is turned up "at
" each end, proceeding at first in a straight, and then in a curved
" direction, from the toe to the heel on one side, with holes at the
" toe and heel, the middle rivetted and bolted to another piece
" of iron, so as to be flexible and turned up at one end with holes
" to screw in points of any size near their extremities. Across
" the two pieces of iron " " is affixed a bolt, flexible or otherwise,
" with a screw and nut at the end, to widen or contract the
" before-mentioned two pieces of iron at the heel."

[Printed, 4*d*. No Drawings.]

A.D. 1863, January 20.—Nº 176.

BLACKWELL, Samuel. — "Improvements in apparatus for
" applying water or other fluid to the legs and other parts of
" horses and other animals."

"To apply water or other fluid continuously for any desired
" length of time to the leg of a horse or any other animal with
" a view to cool, foment, or poultice the same," a hollow tube or band of vulcanized rubber is used, "perforated with numerous
" small holes, so as to divide the fluid into numerous small streams." The ends of this perforated hollow band are closed, and a flexible supply pipe is connected with it at one end. The other end of the supply pipe is connected to the vessel containing the fluid, and the flow is regulated by a cock. The vessel containing the fluid may be fastened on the back of the horse. The perforated tube is attached to the leg by a strap. Sponge or other absorbent porous substance may be secured over the part of the leg where the fluid is to be applied, so as to act as a poultice.

When this invention is applied to any part of the animal but the leg, the form of the perforated tube and the means of attachment will require to be varied.

[Printed, 1*s*. Drawings.]

A.D. 1863, March 5.—Nº 621.

WELLS, William.—(*Provisional protection only.*)—"Improve-
" ments in horse-shoes, and in the method of fastening the
" same."

"The invention consists in forming horse-shoes without nail
" holes, and in fastening them to the hoofs" by "two or four
" projections or hooks from the shoe," which are clamped by one

or two bands of iron passing in front of the hoof. The "bands "may be tightened by a screw or clamp."

[Printed, 4*d*. No Drawings.]

A.D. 1863, March 17.—N° 716.

NEWTON, William Edward.—(*A communication from Patrick Hayes.*)—"An improved preparation for the cure of scab, foot "rot, and other diseases of sheep and cattle."

This preparation is a black soap, which is dissolved in water, and used in a properly diluted state for the cure of cutaneous affections in sheep and cattle.

Any of the following ingredients are dissolved in water, and subsequently added to a saponaceous mass made by mixing strong caustic lyes under pressure with waste animal matters:—Oil of tar, fat of tar, spirits of tar, oil of coal, the oil or gum of the Australian grass tree, the tar or oil of the red and white gum trees of Australia, Stockholm tar, pitch, resin, or tallow. Sulphur is then added in the proportion of 1 to 20 by weight.

[Printed, 4*d*. No Drawings.]

A.D. 1863, March 18.—N° 730. (* *)

NORRINGTON, Frederick.—"Improvements in girths or "bands and knee caps for horses." The girth is a strip of vulcanized rubber or rubber webbing; each end is turned back to form a loop; the portion turned back is joined to the strip by vulcanizing, and for strength a lining may be added. Through each loop passes one bar of a buckle, the other bar carrying three or other number of small buckles for the saddle straps. The buckle bar can be applied before or after the vulcanizing, according to its make; or two or more separate buckles may be fastened on at each end. The bands or rollers are of vulcanized rubber with a loop three or four inches from each end; one loop admits a buckle, the other a buckle bar (both similar to the above) to the outer bar of which leather straps are sewn. The knee caps are of vulcanized rubber, made in one piece with the straps, which may be strengthened with a lining. The middle of the cap is thicker than the other parts; at one side buckles are attached as before described.

[Printed, 10*d*. Drawing.]

A.D. 1863, May 6.—N° 1133.

DAVIES, George.—(*A communication from Charles Alexandre Louvrier.*)—" Improvements in machinery or apparatus for forg- " ing and dressing horse-shoe and other nails."

" The object of this invention is to facilitate the manufacture of " horse-shoes. To this end the shaping die or mould is mounted " or formed upon one of a pair of rolls, and provided with a " moveable front piece which acts as a nipper to seize the bar iron " fed to the machine, and retain a fast hold of the severed portion " or blank while it is being partially bent and shaped, and until " by the rotation of the rolls the blank has arrived within their " grip. Upon the surface of the lower roll is formed a counter " die curved somewhat like the contour of the finished shoe. " The moveable front piece or finger of the shaping and swaging " die carried by the upper roller is mounted upon a rock shaft " which passes longitudinally through the roll and extends " beyond the end thereof, where it is formed into a crank which, " resting upon a fixed cam surrounding the journal of the upper " roller, is actuated thereby during the rotation of the rolls. The " iron is thus grasped and released at suitable intervals by the " moveable front or finger of the shaping die. When a blank " of suitable length has been cut off as above-described, it is " carried by the rotation of the rolls between two inclined rock- " ing arms furnished with antifriction rollers which project into " curved annular grooves formed in the periphery of the upper " roll, and the blank is thus bent around the shaping die just " before the action of the swaging die begins."

[Printed, 1*s.* 6*d.* Drawings.]

A.D. 1863, June 2.—N° 1378.

PAGE, Thomas. — (*Provisional protection only.*)—" Improve- " ments in shoeing horses." This improvement consists in securing a piece of wood or gutta percha to the horse's hoof by marine glue or other suitable cement, and securing the shoe to such piece of wood or other material. Horse-shoes may thus be fastened without driving nails into the hoofs. To fasten the shoes, nuts are imbedded in the wood, and small bolts are fitted thereto. These bolts pass through the shoe into the screw of the nut, and secure the shoe to the wood. The heads of the bolts may be square or bevil countersunk like ordinary screws, so that they may be flush on the under side of the shoe.

[Printed, 4*d*. No Drawings.]

A.D. 1863, June 16.—N° 1502.

WILLIAMS, FRANCIS STANTON. — (*A communication from Elbridge Wheeler.*)—" An improved apparatus for shaping plastic " materials, and hot, but not melted metals, by means of pres- " sure, percussion, or rolling."

The apparatus consists in a mould of solid material to be " used " in forging hot or cold metals, or in compressing plastic sub- " stances into regular or irregular shapes." The mould may be made of metal, wood, or any solid substance capable of resisting the pressure brought to bear upon it; and it may be used in place of an ordinary sand mould; " but being solid it is intended " to effect for solid and plastic substances much the same " results that the sand mould does in castings, while it possesses " one great advantage over them, which is, that after a casting, " sand moulds are ordinarily broken up to remove the casting, " while these moulds are simply taken to pieces, and the parts " may then be reformed into another mould, and thus serve for " any number of successive operations." In shaping metal or plastic substance by pressure or percussion, " the apparatus con- " sists in a solid block or plate of metal as a bed, upon the upper " surface of which is placed another block or plate of the same " dimensions, but perforated throughout from its upper to its " lower face by a hole of any required shape or size. This upper " plate may also be furnished with a hinge on one of its lateral " faces, and with screws or bolts on its opposite face, so as to " allow of its being opened laterally to remove the object forged; " while in the operation of forging it is held fast by its screws or " bolts. The two blocks or plates may either be securely bolted " together, or the upper may be simply kept in place, but in con- " tact with the lower, by dowel pins attached to one plate and " penetrating or even perforating the other. When thus united, " an open box is formed with strong sides and bottom. In this " 'box' are to be arranged separate pieces of metal shaped as " 'reverses' of the corresponding parts of the object to be pro- " duced. The interior of the box is thus converted into a mould " the exact counterpart of all the faces of the desired object,

" except the upper one. Into the mould thus formed the hot " iron is now to be introduced, and a driver, whose under sur- " face is made the counterpart of the remaining face of the " object wished, is stamped, hammered, or compressed upon it. " As all the parts are easily divisible into sections, though kept " in place by the box, while the apparatus is in use, the operator " can easily release the forging, though depressions, undercuts, " and projections may exist on or in the various surfaces of the " mould."

An application of this invention to the manufacture of horse-shoes is described in the Specification.

[Printed, 1*s*. Drawings.]

A.D. 1863, June 19.—N° 1534.

MIDDLETON, SAMUEL.—(*Provisional protection only.*)—" Im- " provements in the manufacture of iron, or other metal shoes, " and in the method of securing the same, to the hoofs of horses " and other animals, without nails."

The top part of the shoe is made in one or two parts, and curved or bevelled over so as to grip the hoof firmly. The peak in front has two holes in each side, and one in the centre formed to receive a wedge, wedges, or screw. The bottom part covers the bottom of the hoof so as to protect the frog.

To secure the shoe on the hoof, four notches are " cut in the " horny part, two on each side, opposite each other," also a hole in the centre of the hoof; four pins are used, each having a slot in the centre, " the resemblance of a nail head at one end, and a " flat point at the other end. The pins are passed through the square holes at the side of the shoe, and a wedge or screw is passed through the centre of the hoof and shoe. A narrow strap may be laid in a groove across the hoof.

In a modification of this invention the top part of the shoe is open on each side with a hole at each edge, also in the centre behind. The bottom part is wider than a common horse-shoe, with a raised curb at the inner edge, " leaving a grove edge on " which is placed the top pert of the shoe; round the grove are " five holes, in the centre one, at each side two." " To secure the " shoe the back part is rivetted on to the grove shut under the " curl;" two notches are cut in the hoof; and two pins are passed transversely through the holes at the side, a pin is passed through the holes at the back of the shoe resting in the centre of the front, fixed by means of an under screw passing through the hoof with a nut. At the top a strap is formed.

For roughing, fine studs are placed through the holes by which the shoe is riveted, and are wedged in.

[Printed, 4*d.* No Drawings.]

A.D. 1863, June 23.—N° 1576.

STOCKER, Alexander Richmond.—"Improvements in "preparing and fashioning iron, applicable to the manufacture of "boot heels, tips, and horse-shoes, and in part of the machinery "or apparatus to be employed therein."

The invention consists in forming "grooved, channelled, in-"dented, and other rods or bars of iron from which boot heels "and tips are to be made by special rolls or apparatus, whereby "two or more of such grooved, channelled, or indented rods or "bars are produced in one piece by suitable projections formed "on one or both the rolls or apparatus." After leaving the rolling mill the bars are cut into suitable lengths and divided longitudinally by circular cutters. Rods may receive the desired indentations after leaving the rolling mill. They are then bent into the desired form by any well-known bending contrivance.

Also in the formation of horse-shoe blanks:—Puddled bars are made into a cross pile of suitable size and heated. They are then rolled, bringing out a 15 or 20 feet bar, 7 in. wide by ¾ in. thick. From this bar pieces of a curved form approaching the shape of a horse-shoe are cut out by a suitable pair of cutting tools. Each piece is cut from the width of the bar without waste of metal. The blanks may be cut to any width and weight required, and the bars may be rolled, varied as to their width and thickness according to the size, &c. of the blank to be produced. The bar from which the blanks are cut may have a piece of steel welded on along the centre, so that each shoe made therefrom will be steeled at the toe.

[Printed, 1*s.* 4*d.* Drawings.]

A.D. 1863, June 25.—N° 1600.

PAGE, Thomas.—"Improvements in horse-shoes and in their "fastenings."

The shoes are made of wood, gutta-percha, india-rubber, or other elastic material in the usual form; or in the form of a plate covering the entire sole of the hoof, or leaving the frog uncovered. Metal points project below the surface of the elastic material, giving good hold and bearing to the horse's feet. The elastic material, though not intended to be the wearing surface, should have great toughness and wearing properties, as it may in parts touch the ground. It is principally intended to be interposed between the wearing surface and hoof, and to have the wearing surface attached to it, the wearing points may be square or round, and tapering to a dull point below. They may be set near each other in the elastic material or apart. Metal bars across the foot may be used in place of studs. The india-rubber, wood, or elastic material is secured to the hoof by marine glue. In addition to the cement, two or three nails or screws are sometimes added. Clips are applied to the elastic material to keep it in position; or they may be on the metal wearing bars, and keep themselves and the elastic material in position. When a metal surface similar to an ordinary horse-shoe is used, it is cemented to the elastic material, or it may be cemented to the hoof.

[Printed, 8*d*. Drawing.]

A.D. 1863, July 7.—Nº 1685.

BARTHOLOMEW, George.—(*Provisional protection only.*)— " Improvements in shoes for the feet of horses and other animals, " and in the means of connecting them."

To give freedom to the natural action of the animal's foot the fore part of the shoe is connected to the hind parts by hinges or elastic connexions. To the fore part extensions are connected which rise over the front of the hoof to receive a band which may be of steel. The sides of the shoe have guide pieces, or clips, and the back is turned up to form an abutment, which has a pad or flap of strong leather, with a plate to keep the pad in shape, and hooks to hold to the band, which when the shoe is applied to the foot, passes from the front extensions round, and is held by the back pad; and then extends to the front again, where its ends are connected by a buckle to hold the shoe in position.

[Printed, 4*d*. No Drawings.]

A.D. 1863, July 18.—Nº 1807.

MAVOR, Frederick Joseph. — " Improvements in horse- " shoes."

In this improvement the foot face of the shoe corresponds in width to the wall, or crust, of the hoof, so that no part of the shoe shall press on, or extend over the soft part of the foot. The tread face of the shoe is bevilled inwards, so that the heads of the nails that secure the shoe to the hoof will be lower than the outer edge which forms the tread of the shoe, and will, therefore, be protected from wear. By thus narrowing the tread and cutting away all superfluous parts, the shoe will be considerably lightened, and the horse have a good foothold, and as the foot face lies flush and close on the wall of the foot, neither grit, mud, nor pebbles can get between the shoe and foot. The shoe is well adapted for a flat foot. It also does away with the operation of paring the horn from the sole, which horn, when allowed to grow, forms the best possible protection to the sensitive foot.

[Printed, 6*d*. Drawing.]

A.D. 1863, August 24.—Nº 2091.

BATT, HENRY.—(*Provisional protection only*.)—" Improvements " in roughing horses without taking off the shoe."

One piece of wrought iron which is Y-shaped, clasps each side of the front of the horse's foot with its forked end, the other end of this piece of metal, which is tapped with a screw, passes through a hole in the centre of a cross piece, and is screwed up tight by a nut at the back thereof. The cross piece is made to clasp the hind part of the shoe by a bevel which keeps it firm. The caulkings are screwed into the clog; two into the arms of the Y-shaped piece, and two into the cross piece.

[Printed, 6*d*. Drawing.]

A.D. 1863, August 28.—Nº 2127.

MULET, LOUIS ALEXANDRE.—(*Provisional protection only*.)—" An improved method of shoeing horses, and covering the feet " or hoofs of other domestic animals with hardened india-rubber, " gutta-percha, and other improved similar materials."

The shoes are made of hardened india-rubber, gutta-percha, and such like materials, combined with pulverized silica, iron or steel filings, or other granulated metals, sand, and pounded glass. They may be applied to the feet of animals permanently or temporarily. In cases of disease or tenderness the shoe may be fastened on by straps.

[Printed, 4*d*. No Drawings.]

A.D. 1863, December 3.—N° 3041.

GREEN, John.—(*Provisional protection only.*)—"Improvements " in horse-shoes."

In the improved shoe that part which comes in contact with the hoof is perfectly flat; and to give a solid bearing to it the wall of the hoof is left as wide as the shoe. The shoe is made of iron of such a section as to give the inner circle of the shoe a rounded form, by which the legs and feet of the horse are not so liable to be cut as by the ordinary form of shoe. The inner surface being a trifle broader than the part in contact with the ground the shoe may be worn very thin and yet not come off.

[Printed, 4*d*. No Drawings.]

1864.

A.D. 1864, January 8.—N° 51.

PIDDING, William.—(*Provisional protection only.*)—"Improvements in the manufacture of soles and heels for boots " and shoes, and also in the manufacture of horse-shoes."

This invention consists in manufacturing the soles and heels of boots and shoes of india-rubber or other elastic material, having cells or cavities on one surface and projections of less superficial area on the opposite surface. These cavities are filled with studs or plates of a less yielding material than india-rubber. The studs or plates are inserted on the outer surface of the boot or shoe. Holes are made in the projections on the upper surface to receive screws or rivets to fasten the heels or toes to the boot or shoe. The screws or rivets are covered by the studs, plates, or filling-in composition. The object of this combination is to afford elasticity of tread.

Horse-shoes are manufactured of the same combination of elastic material and studs or plates as the toes and heels above described. "But in some cases a kind of bridge is formed within " the horse-shoe, adapted for the hollow part of a horse's foot " to rest upon, such bridge being manufactured in the same " manner as the soles and heels above described." The filling-in plate inserted in front, should overlap the front part of the horse-shoe.

[Printed, 4*d*. No Drawings.]

A.D. 1864, January 9.—N° 64.

COPPARD, JOHN.—" Improved appliances to be adapted to " horse-shoes as a substitute for what is termed 'roughing.' "

The invention consists in adapting to the fore shoes of horses pieces of metal, one of the pieces being a loose " roughing piece " to dispense with the necessity of roughing horse-shoes as commonly practised; the other being intended to prevent clogging of the horses feet in snowy weather more particularly. The loose " roughing piece " consists of a piece of metal that clips the toe part of an ordinary horse-shoe, and carries a projecting piece of metal "roughed" in any suitable manner; to this piece other pieces of metal intended to fit against the foot of the horse are hinged and are fastened by a strap to the horse's foot. The " anti-clogging " piece or snow plate consists of a flat piece of sheet metal turned up at the back edge and having a hole therein through which the strap before mentioned passes and holds the back part of the plate against the horse's foot, the front part of the plate being securely held by forming a long hole therein and passing the clipping part of the roughing piece through the hole before passing, fixing it to the foot.

In a modification of this invention there are three roughing pieces used, one at the toe and one at each side near the heels. These roughing pieces are fastened to the hoof by screws passing through their clip pieces into the hoof. They may be connected together under the hoof by wires. The snow plate may be attached by a strap.

[Printed, 10*d*. Drawing.]

A.D. 1864, January 27.—N° 232.

PARKES, FRANCIS.—(*Provisional protection only.*)—" Improve- " ments in the manufacture of horse-shoe nails."

These nails are made "from strips or bars of mild cast steel " or homogeneous iron or steel," having a breadth equal to the length of the nails to be made. These bars are placed between rolls having such a figure as will give to the bars the form, in transverse section, of the nails to be made. The rolled strips or bars are then annealed, and cut up transversely to form horse-shoe nails, which are annealed to reduce them to the proper temper and pliability for use.

Or bars may be rolled to have, in cross section, the figure of two horse-shoe nails jointed point to point. They are treated in the same manner as those above described. The jointed nails are divided and their points perfected.

[Printed, 4*d*. No Drawings.]

A.D. 1864, February 24.—N° 461.

BATT, Henry.—"An improved clog to be applied to horse-" shoes as a substitute for 'roughing.'"

This clog is composed of two main pieces of iron, a cross piece and a Y-shaped piece. The two ends of the Y-shaped piece are turned up and clasp the front of the hoof, thus holding the clog close to the shoe. The tail of the Y piece, which is screw tapped, passes through a hole in the centre of the cross piece and is screwed up tight by a nut at the back thereof. The ends of the cross piece are turned up so as to clasp both ends of the back of the shoe. The caulkings are screwed into the clog, two into the Y-shaped piece, and two into the cross piece. The caulkings are provided with a slit at the end of their stems so that they may be unscrewed if the caulking breaks off.

[Printed, 6*d*. Drawing.]

A.D. 1864, March 17.—N° 687.

CLARK, William.—(*A communication from Hanns Ferdinand Jullius Peschell and Henri Charles de la Frenaye.*)—"Improve-" ments in horse-shoes."

The improved shoe is made with a projecting rim all round its outer edge. This rim alone touches the ground and protects the nails from friction; the shoe is in fact formed of angle iron forged in a circle. The projecting rim may be toothed to afford better foothold. The shoe may also be made in two parts by fastening one of the improved shoes on to an ordinary shoe. The shoe may be further modified as follows:—The inner surface of the rim may be corrugated, and the nail holes made in the hollows of the corrugations, that is, the parts where the rim has been narrowed. By this arrangement the heads of the nails are more easily fixed and the nails inclined as desired; or a single or double groove may be made throughout the extent of the rim. In this case the rim must be made of extra breadth to afford space for the groove or grooves wherein the nail holes are formed.

[Printed, 1*s*. Drawing.]

A.D. 1864, May 21.—Nº 1283.

FOWLER, John, junior.—"Improvements in horse-shoes."

In this improved shoe vulcanised india-rubber is placed between two metal shoes; the inner one is nailed to the hoof, and has studs upon it which pass through the vulcanised india-rubber and keep it in its place; below the india-rubber the studs carry the outer shoe and retain it in its place, but the shoe is able to work freely up and down on the studs, which may be projections from or parts of the nails, but it is preferable that they should be separate.

[Printed, 6*d*. Drawing.]

A.D. 1864, June 8.—Nº 1429.

NEWTON, Alfred Vincent.—(*A communication from Augustus Seely.*)—"Improved machinery for making horse-shoes." The mould or shaping die is mounted on one of a pair of rolls, and has a moveable front piece that acts as a nipper to seize the bar iron fed to the machine, and retain a hold of the severed portion or blank, while it is being partially bent or shaped, until by the rotation of the rolls the blank has arrived at their grip. The surface of the lower roll is a counter die like the surface or contour of the finished shoe. The moveable front piece or finger of the shaping or swaging die carried by the upper roller is mounted upon a rock shaft, which passes longitudinally through the roll, and has its end formed into a crank which rests on a fixed cam and is thereby actuated by the rollers. The iron is grasped and released at intervals by the finger of the shaping die. When the blank has been cut, it is carried by the rotation of the rolls between two rocking arms with antifriction rollers, which project into annular grooves in the periphery of the upper roll; and the blank is thus bent round the periphery of the shaping die before the action of the swaging die begins.

[Printed, 8*d*. Drawing.]

A.D. 1864, November 30.—Nº 2985.

CAUNTER, Henry.—"Improvements in preserving ships bot-
" toms, and other surfaces under water, and in preventing the
" formation of barnacles, and other accumulations thereon, which
" improvements are also applicable as a preservative from the
" effects of moisture or damp, and as a cure or preventive of the

" scab in sheep, and a protection to them from the effects of damp " and exposure."

About three parts of the greasy matter or tar produced by distilling peat is mixed in a mill with one fourth of water. The composition may be employed in a cold or warm state by a brush or by immersion. In hot climates a small proportion of mineral or vegetable tar, or other resinous substance is used, and sometimes vegetable or mineral tar, &c. is used in place of the water. As a dipping wash for sheep to prevent or cure scab, &c., a small quantity of soda or other alkali is added.

[Printed, 4*d.* No Drawings.]

A.D. 1864, December 30.—N° 3248.

BONNEVILLE, Henri Adrien.—(*A communication from Hector Edouard Bastien.*) — " Improvements in machinery for manu" facturing shoes for horses and other animals."

" This invention consists in a direct-acting machine, working " without shocks and without steam hammers for making shoes " for horses and other animals."

The bars or pieces of iron heated to a suitable temperature are fixed by means of levers on the heads of pressing pistons, and which have exactly the form of the shoes to be made. The motive piston, connected by rods and cross bars with the pressing pistons, is moved by steam or hydraulic pressure exercised in its cylinder. .On the face plates of this cylinder are placed two mandrels, which have the exact shape of the exterior of the shoe; these mandrels are " of a helicoidal form," and have a slanting position, so that the pistons, " by entering them, force the iron bars to " bend into this inclined plane until they have taken the exact form " of the heads of the said pistons." When the latter have nearly attained the end of their stroke, the levers are " unclinched " by means of a moveable rod placed on a guide, " and the bent bars " are liberated; the pressing pistons continuing their stroke, " arrived at the end of which they carry the bent bars into dies " placed at the bottom of the said inclined planes. These dies " are composed of several pieces of steel, and carry steel nails let " into them for the purpose of finishing the shoes which have " taken the exact form of the pressing pistons when these latter " are at the end of their stroke." During the latter part of the operation two other pieces of iron are placed on the corresponding heads of the pressing pistons, and two shoes are thus made at the same time on each side of the motive piston. "The irons are then finished by means of an ordinary punching machine which completely pierces the nail holes made by the die or matrice."

The machinery may be modified by making the pistons or mandrils moveable, or by placing one or more cylinders at each end of the machine; or the operation may be performed by drawing one single file of mandrils, or entirely by pushing, or entirely by pulling.

[Printed, 8*d*. Drawings.]

A.D. 1864, December 31.—N° 3254.

NEWTON, William Edward.—(*A communication from Vittore Verzoli.*)—"Improved machinery for making horse-shoes."

The bar iron of which the shoes are to be made, is cut into lengths, which are heated and placed in the machine against a fixed die or mould, around which they are bent by moveable jaws. The heated pieces are then pressed between dies which are moved up and down by cranks, or by a piston fitted in a steam or air-cylinder. There are two dies, each formed of two pieces of tempered steel, having internally the exact shape of the horse-shoe, and presenting the necessary indentations and projections to form corresponding parts on the horse-shoe. The lower die is set on a plate, which is provided with jaws that press the horse-shoe against the die, and then open to allow the shoe to be discharged. "The upper die is " attached to a box which is connected by a joint to a lever so " that it may be raised and lowered on to the iron. The squeezing jaws are jointed to two arms, which are attached to reciprocating pieces or bars, so that by moving the latter forward or " backward the jaws may be opened or closed." "These reciprocating bars are worked by bell-crank levers, one arm of which " is provided with a bowl or roller, which works in an eccentric " slot or groove in the excentric plates. These excentric plates " are mounted on a shaft which carries a toothed wheel, whereby " motion is communicated to it through a pinion and toothed " gear from any prime mover. On the axle or shaft of the " toothed wheel there is a crank, which actuates a lever, whereby " motion is communicated to the plunger which works one of the " moveable dies. Another moveable die in a separate frame is " attached to one end of a piston rod, which is moved up and "down by the action of steam or compressed air in a cylinder. "When the iron has been pressed into the form of a horse-shoe, "the moveable die is lifted up by a counterbalance weight at the "end of a lever, and the finished shoe is removed from the lower "of fixed die by means of a vibrating lever, which is actuated by "a cam on one of the working shafts. The main shaft is pro-"vided at each end with a crank whereby a pump or pumps for "compressing the air may be worked."

[Printed, 10*d*. Drawing.]

1865.

A.D. 1865, March 7.—N° 639.

CLARK, William.—(*A communication from Pierre Charlier.*)—"Improvements in shoes for horses and other animals."

The shoe is formed of a bar of iron, steel, or other hard material thickened at the toe and heel, and bent to the form of the hoof. It is fitted in a groove made round the hoof of the animal at the lower part. The nails, or screws, for fixing the shoe, are received in a shallow groove made in the shoe. The shoe may be made of gutta percha or india-rubber instead of metal.

[Printed, 10*d*. Drawings.]

A.D. 1865, April 11.—N° 1025.

CLARK, William.—(*A communication from James Fenner Mallet.*)—"Improvements in horse-shoes."

The invention relates to improvements in horse-shoes which are made "of sectional parts jointed together with a view to adapt "them to hoofs of different sizes." The improved shoe is also made so that it conforms to the shape of the hoof while growing, and is also less liable to break at the joints than hitherto. It may be supported by calks at the joints, and the "heel sec-"tions" are "capable of lateral adjustment." The "shoe is "composed of five separate pieces or segments of circles," "pivoted together so as to form close or 'rule joints.'" The joints are made of pins which are cast on one section and are riveted through the other.

[Printed, 1*s*. Drawing.]

A.D. 1865, June 16.—Nº 1629.

BROOMAN, Richard Archibald.—(*A communication from Hector Edouard Bastien.*)—" Improvements in the manufacture or " shaping of iron intended for the shoes of horses and other " animals, and in machinery employed therein."

The object of the invention is to shape iron for horse-shoes at a single operation. There is a pair of rolls of which one has " a " periphery of triangular section, with a portion cut away to correspond to the irregular form to be imparted to the iron and " intended to produce the two irregular faces." " The triangular " periphery of this roll fits into a counterpart of the reverse shape " in the lower roll, which is intended to roll the two regular faces " of the iron." The iron is thus rolled by a single passage between the rolls.

Or a " to-and-fro rectilinear motion " may be substituted for the rotary motion. For one of the rolls a " matrix " is substituted, which is moveable " by cranks or otherwise," while the roll " simply turns on its axis." The bars are fed in between the roll and the matrix from a hopper.

Or again " a curvilinear movement " may be used, the matrix being fixed, and the roll moveable and mounted on lever arms.

In another arrangement four rolls are fixed at right angles to one another, so as to bear upon a bar of iron on all four sides of its circumference at once.

[Printed, 10*d*. Drawing.]

A.D. 1865, June 24.—Nº 1693.

FONTAINE MOREAU, Peter Armand Le Comte de.—(*A communication from Bernard Courvoisier, Maxime Antoine Ducis, and François Bigoy.*)—" Certain improvements in machinery for " the manufacture of horse-shoe and other nails."

The inventor employs, in manufacturing nails, revolving cylinders, between which are iron bars from which the nails are produced. On the periphery of each cylinder recesses are cut, forming the dies which give shape and dimensions to the nails, and each nail as it is formed, separates and falls out of the cylinder. The cylinders are put in motion like other rolling machines, and revolve in opposite directions. What is claimed is the formation of nails by means of rollers or revolving cylinders, in which are cut the shape and dimensions of the nails to be manufactured.

[Printed, 8*d*. Drawing.]

A.D. 1865, July 19.—N° 1887.

INCE, Thomas Henry.—"Improvements in shoeing horses."

In this invention screws are used instead of nails. The shoe is drilled for the reception of the screws and the holes are countersunk to receive the heads of the screws. Holes are drilled in the horn of the hoof to correspond with those drilled in the shoe. They are drilled parallel with the outer surface of the hoof, and of the same diameter as the shafts of the screws, so that the crust of the hoof may neither be forced outwards or inwards, as would be the case if the holes were smaller in diameter. The screws have threads or worms of considerable depth as compared with the diameter of their shafts. The shafts of the screws may be tapered, but it is preferred that they should be cylindrical. It is desirable that the diameter of the thread of the screw should be less at the point than at the head. In some cases the surfaces of the heads of the screws, in place of being at right angles to the central line of the shafts, are inclined thereto, so that when the screws have been screwed into the foot, their heads may come more nearly parallel with the under surfaces of the feet.

[Printed, 6*d*. Drawing.]

A.D. 1865, August 3.—N° 2017.

ANDERSON, Luke.—"Improvements in machinery to be used "in the manufacture of horse-shoes, shoe heel and toe tips, and "other similar articles."

A pair of steel rollers, mounted on standards, have a top roll grooved on the face to receive three iron dovetail cutters, kept tight by collars and screw nuts, which cut off the length required for each article. "Each length or blank of iron thus cut off and "countersunk passes to the rolls on to a disc, or table partially "revolving in a reciprocating motion half round, and back upon "a vertical shaft or spindle," the head of which carries a template of the form to be given to the horse-shoe or tip by guides; the blank is held in position, while by the revolution of the disc it is bent round the template, and receives the required form; after which, by the action of a cam upon the main shaft working levers attached to the template spindle, the template is withdrawn through an opening in the disc, and allows the shoe or tip free to fall. This machine is capable of turning out three shoes or tips for each revolution of the upper roller.

[Printed, 10*d*. Drawing.]

A.D. 1865, August 26.—Nº 2197.

SYMMONS, John.—"Improvements in the manufacture of "horse-shoes, and in machinery used in the said manufacture."

On one side of a heated bar of iron a groove, commonly called "the fullering," is made, which extends nearly to the ends of the bar; on the other side of bar, at the same time and by the same machine, is produced "the inclination to form the seating of the "shoe." Countersinkings are made at the points where nails are to be driven. The action of the machine leaves the ends of the bars untouched and having their original figure. The bars while still hot are bent into a horse-shoe form by a machine resembling that commonly used for bending shoe tips.

The improvements in the machinery are the formation on one side of the bar of the groove called "the fullering," or the countersinkings, and at the other side of the bar the inclination to form the "seating of the shoe," the "shaping of the bar" on both sides being effected by rolling machinery. The rolls may have a continuous instead of an oscillating motion.

[Printed, 2*s.* Drawings.]

A.D. 1865, September 23.—Nº 2433.

DAVIES, George.—(*A communication from Léon Chrysostôme Viel, and Pierre Michel Sibut.*)—"Improvements in the manu-"facture of horse-shoes, and in the machinery used for such "manufacture."

The shoes are made entirely by mechanical means, avoiding forging and piercing by hand; this latter operation especially require the greatest care, that the iron may not split at the edge, and that the holes may be pierced at the desired points. Each shoe is formed of a rod or bar, cut to a certain length, and. submitted to the "shaping machine," which stamps the ends of the shoe to the proper thickness. The machine operates upon two rods at a time with a double set of dies and punches; when stamped, the bar is placed on the table of a machine, which bends or curves it round a central core, imparting to it by jaws the dimension of the finished shoe while the iron is held by the bending machine; the table of the latter passes under a machine that carries a block having as many punches as there are holes to be pierced in the shoe; these punches cut and stamp the holes, which are then ready to receive the nails; the shoe is then entirely finished.

"The shaping machine is constructed as follows :—A suitable " frame is provided with two tables having matrices sliding in " horizontal V grooves, above which are punches sliding in " vertical V grooves, and actuated alternately by means of " excentrics keyed upon a revolving shaft. The outer side of " the iron is shaped by means of movable hammers forced " inwards by levers which are actuated by the ascent of the frame " which carries the punches. The bar being thus forced and " shaped is taken to the bending machine, one part of which " curves it to the required form, and another part punches the " holes for the nails, thus finishing the shoe.

"The bending portion of the machine is as follows :—Upon a " table sliding in V grooves is fixed a mandrel or core intended " to form the inner part of the shoe, and a sliding cross head " provided with two jaws jointed thereto, the outer extremities " of the said jaws being furnished with rollers working against " cams or shaping plates fixed to the table, so that as the cross " head advances the jaws are forced inwards, so as to bend the " bar round the core. The cross-head is forced forwards by " means of a screw.

"The punching portion of the machine is somewhat similar to " the shaping machine, consisting of a frame having two tables " and two sets of punches working in vertical V grooves, and " actuated by means of excentrics fixed on a revolving shaft."

[Printed, 10*d*. Drawing.]

A.D. 1865, September 28.—Nº 2496.

NEWTON, William Edward.—(*A communication from Alphonse Auguste Watrin.*)—" Improvements in shoeing horses."

The invention consists in shoeing horses in such a manner as to maintain the shape of the hoof, or to restore the hoof to its primative form when it has become deformed. "Two strong " oblique points" are formed at the extremities of the two heels on the inner side of the ordinary shoe, "so as to form inclined " planes and give support to the terminals of the arch of the " hoof." These two inclined planes constitute a kind of wedge which enters between the heels and causes them to separate.

To restore a deformed hoof to its primitive form, "a sort of " moveable vice is employed." This vice is composed of two jointed arms, which hold between them a three cornered piece of metal moved by a screw. The extremities of the arms are roughed like a vice. When the shoe is nailed on to the hoof the instrument is introduced between the points at the extremities of the heels. Upon the screw being actuated by a cross handle, the three cornered piece is forced between the arms of the vice, and by separating them determines the expansion of the shoe. A slight blow from a hammer on the shoe, sets it and prevents its quarters from springing back on the withdrawal of the expanding instrument.

[Printed, 8*d*. Drawings.]

A.D. 1865, December 6.—N° 3134.

SAINTY, JOHN.—(*Provisional protection only.*)—" Improvements " in shoeing horses, ponies, and mules, by using shoes without " nails."

This shoe is designed to obviate the injury caused by repeatedly nailing the shoe to prevent it coming off. The improved shoe is made in the usual form, but with a steel rim encircling the outside of the hoof; the sole is welded to this rim, and cut through to it, which allows the shoe to expand. The wearing part, or outer sole of the shoe, is made in five pieces, and each piece may be removed separately. India-rubber is placed between the outer and inner soles, and secured by screws which pass through to the inner sole and thus fasten the shoe to the hoof.

[Printed, 4*d*. No Drawings.]

A.D. 1865, December 12.—N° 3208.

TOMLINSON, CHARLES KNOWLES, and HAYWARD, CHARLES JOHN.—" Improvements in the preparation of sheep " ointment."

The following ingredients are combined, by preference, in the following proportions :—

Quicksilver, 6 lbs.
Compressed lard or tallow, 15 lbs.
Venice turpentine, 2 lbs.
Castor oil, 15 lbs.

the quicksilver and the turpentine are rubbed together till no globules of quicksilver can be detected, even by the aid of a powerful magnifying glass. The lard and castor oil are melted together and gradually stirred in.

[Printed, *4d.* No Drawings.]

1866.

A.D. 1866, January 15.—N° 125.

HARRIS, James—(*Provisional protection only.*)—"Improved "portable appliances for horses' feet in frosty weather to supersede the necessity for what is termed 'roughing' the shoes."

This appliance consists of a stout iron plate having one or more straps retiring from the front, "bent up to clip and laterally press "against the inside edges of the front part of the shoe," while the front part of the plate has an axis on each side to receive straps connected to the said axis by hinge joints; the straps being long enough to extend over the front part of the horse's hoof, and formed at their ends to receive a leather strap or thong for holding the same in position. Underneath the plate is a protecting part of steel, to be replaced when worn down. The plates are formed by dies with a stamp from pieces of iron prepared for the purpose and heated. A small pad or piece of leather or india rubber may be placed between the plate and shoe.

[Printed, *4d.* No Drawings.]

A.D. 1866, January 18.—N° 169.

HIBBERT, William.—"Improvements in the combination of "chemical matters, and mechanical apparatus applied therewith "for the prevention or cure of contagious and other diseases to "which human beings and animals are subject."

"This invention consists, first, of a compound solution to be "used internally as a medicine, or outwardly as baths, embroca-"tions, or saturated bandages; it also acts as a disinfectant and "preventive agent against infectious diseases generally.

"Secondly, of mechanical apparatus for filtering, purifying, "and disinfecting the polluted air or atmosphere in infected "situations. It is particularly applicable to preventing and "arresting the progress of fermentation and decomposition in

" the blood of human beings or animals, as in the cases of rin-
" derpest, fevers, womb diseases, scrofula, mortification, glanders,
" mange, running sores, and other diseases arising from an
" unhealthy state of the blood."

The compound consists of chlorides of magnesium, bromine, and zinc, either separately or in any combination.

" For cattle, one to two ounces of the solution with five to ten
" per cent. of chloride of zinc added may be given in a pint of
" water, or as much water as the beast will drink, but these
" proportions may be varied according to the virulence of the
" disease."

" For outward application, as baths or embrocations, the said
" solution may be freely applied; also painless bandages which
" do not stick to the skin when taken off are obtained by impreg-
" nating cloth with the above solution."

The mechanical apparatus consists of an auxiliary lung respirator, which I make of leather or other suitable material, and of any suitable conformation to suit cattle or human beings. In the muzzle or pad for the mouth or nose are punched two or more holes sufficiently large to ensure easy breathing. To each hole are attached a tube and valve with couplings for attaching thereto tubing of any required length. One of the valves is fixed to open inwards towards the mouth, the other to open outwards from the mouth. A bag or receiver is fastened under the end of the muzzle to receive the saliva with an outlet for its removal. Tubes of any required length are coupled to the supply and outlet valves by which the pure air may be supplied direct to and the respired air conveyed direct from the respiratory organs any distance from the patient or hospital.

The "improved air disinfecting filter is attached or not to
" a reserve chamber, from which the respiratory organs are sup-
" plied with disinfected air, and consists of a box sufficiently
" large to supply one or more subjects, in which box is inserted
" a number of tubes which conduct the air through the dis-
" infecting solution, after which it rises through charcoal, coke,
" or other material saturated with the same solutions and through
" a sieve or perforated plate into the reserve chamber."

For feeding, the front part of the stall is partioned off " with an
" opening to admit the head, which opening is enclosed by air-
" proof or disinfecting cloth surrounding the neck of the animal,
" the purified air being supplied by a valve connected with the

" air chamber, and the exhaled air passes through a valve into " the above-named disinfecting filter before its arrival into the " open air."

[Printed, 1*s*. Drawing.]

A.D. 1866, February 3.—Nº 339.

HIBBERT, WILLIAM.—(*Provisional protection only.*)—" An " improved mechanical valve respirator."

This invention relates particularly to preventing the spread and accelerating the cure of rinderpest and other infectious diseases to which animals or human beings are subject. As a disinfectant for filtering and purifying the air, chloride of magnesium, bromine, and chloride of zinc, either separately or in combination, hot or cold are used; if used in combination, to chloride of magnesium in solution at about 56° Twaddell, is added about two ounces of bromine to the gallon of the said solution, and about ten to twenty per cent. of chloride of zinc, by the use of which in combination with the valve respirator complete isolation from infectious contagion is effected. This auxiliary lung respirator is made of strong leather or other suitable material and of any suitable conformation to suit animals or human beings. In the muzzle or pad for the mouth or nose are punched two holes sufficiently large to ensure easy breathing. Two valves are fastened in between the folds of leather or material round the breathing holes, with coupling worm or screw for attaching thereto tubing. " One of the valve clacks is hinged to " open inwards towards the mouth, the other to open outwards " from the mouth, the air supply valve being opened by inhalation and closed by respiration; the other or outlet valve is " opened by respiration and closed by inhalation. A bag or " receiver is fastened under the end of the muzzle to receive the " saliva, with a screw-capped outlet for its removal." Leather or india-rubber tubes are coupled to the supply and outlet valves, the supply tube being attached to the reserve chamber of medicated and disinfected atmospheric air. " For the purposes of safe " removal," says the patentee, " or perambulation, I couple to the " valves short tubes with disinfecting filters inserted therein, one " for the prevention of receiving the infected air, and the other to " prevent its communicating infection. For cattle feeding I " partition off the front part of the stall, with openings to admit " the head, which openings are enclosed by air-proof or dis-

" enfected cloth surrounding the neck of the animal, the purified " air being supplied by a down draught, and taken away by an " up draught. This is partial isolation and will answer instead " of the muzzle for ordinary precautions. My method of pre- " venting contagion being communicated or received through " the medium of the skin is by clothing, surrounding, or ban- " daging the animal with cloth or other suitable material " impregnated with the above-named medicated and disinfecting " solutions."

[Printed, 4*d*. No Drawings.]

A.D. 1866, February 8.—N° 383.

BOBŒUF, Pierre Alexis Francisse.—(*Provisional protection only*.)—" Improvements in the manufacture of artificial coal " tars and their solid desications, such as phenical soaps and " salts."

The solid residues from coal tars are " dissolved warm in " neutral oils," and a small quantity of " piaric or other essential " acid oil " added. A little napthaline may also be added.

In the manufacture of "phenical salts (sels phéniques)" " piaric acid or other soluble phenical alkalies" are mixed with crystalised salts. The mixture is then incorporated with a glutinous substance, such as treacle, and some caustic soda added. Amongst other purposes, this mixture may be used to purify stables.

[Printed, 4*d*. No Drawings.]

A.D. 1866, February 10.—N° 426.

HUGGETT, John.—" Improvements in the manufacture of " horse nails, and in apparatus employed therein."

The nail rod, heated at its end, is held on a table, and acted upon by instruments carrying small rollers; "there are three " such instruments, two of them when in operation act on the " sides of the rod, which they nip between them, and the other " at a short distance from the nip of the side rollers, bears on the " top of the rod and presses it down on to the table or support " on which it rests."

"The rollers are caused to bear against the heated end of the " rod at a short distance from its extremity towards which they " are then drawn. During this motion the instruments are " guided by pattern surfaces which compel the rollers to compress or draw down the rod and bring it to a point. The instruments act several times in the manner above described before the drawing down is complete, and in returning the instruments recede so that the rollers do not then come in contact with the nail rod.

"The pattern surface which governs one of the forming instruments is connected with a handle, by means of which the workman can move it forward a short distance when necessary; by this means the roller carried by this instrument is caused to compress the metal to a somewhat greater extent, and the rod will be properly pointed. More than one of the pattern surfaces may, if desired, be connected with the handles as above described."

"The apparatus is arranged in the following manner:—A slide is caused to move to and fro by connecting it (in such a manner that it can be thrown out of gear when required) with a crank on a rotating axis, to this slide the forming or drawing down instruments are jointed at one end, and each of them carries at the other end two small rollers, one for operating on the nail rod," "and the other running upon the pattern surface. The instrument which acts on the top of the rod projects beyond those at the side, so that it acts immediately after them. The pattern surfaces or two of them are so mounted as to be able to slide a short distance to and from the nail rod when they are in operation; they are supported at the back by wedges, but during each return stoke of the slide the wedges are partly withdrawn, and the pattern surfaces recede so as to allow the drawing down rollers to return without acting on the nail rod. The wedges are moved in and out by stops on the main slide coming against parts to which the wedges are fixed. When the rod is properly drawn down, it is cut off by shears, and the rod is reheated for making another nail. Each nail rod which is being worked, has a sliding guage placed upon it to regulate the length to be drawn down; this guage is set each time immediately after shearing off a nail."

[Printed, 10*d*. Drawing.]

A.D. 1866, March 3.—N° 642.

LARNAUDÈS, Victor.—"A new or improved chemical mixture to be used as a disinfecting and preserving fluid for the cure of disease among cattle, and for other purposes."

This mixture is composed of, "natural water, 100 lbs., sulphate "of zinc, 26½ lbs., sulphate of copper, 8 ounces."

It is used in all places where impure and unhealthy air exists.

In the case of animals suffering from fever or disease a sponge or cloth is dipped into the mixture and rubbed on the body or part infected.

[Printed, 4*d*. No Drawings.]

A.D. 1866, March 27.—N° 902.

GAMGEE, JOSEPH.—"Improvements in the manufacture of "horse-shoes, and in the apparatus employed therein."

A peculiar construction of horse-shoe, affording a firmer foothold to the horse, "whether the foot be pressing forward or back-"wards," also "a peculiar die or shaping tool." "According to "this invention it is proposed to form certain indentations, "depressions, notches, and sharp angles, arranged on the inner "margin of the web, and on the lower or ground surface of the "shoe, in directions radiating from the centre of the foot."

"When each half of the shoe in the process of forging has been "drawn into shape, and before it is fullered or stamped in the "ordinary way, the die or tool" "is employed to produce "notches or depressions running obliquely from the front back-"wards and inwards at the interior part of the ground surface "of the shoe, and to produce other notches running obliquely "from behind forwards and inwards from each posterior "extremity of the shoe, the small burr of iron displaced by "the die at each depression being cut off. These notches vary "in position and number according to the size and shape of "the shoe." It is preferred, however, "to use two directed "obliquely backwards and inwards on either side of the toe, "leaving the web of the shoe strong at the toe, and two more "close to each heel directed forwards and inwards, thus leaving "the quarters of the shoe strong."

In manufacturing light shoes or racehorse plates, the plate is made with a creasing tool, "and a chisel is used to jag the inner "margin of the web on the ground surface, sharp points are thus "raised in front from behind forwards, and behind from before "backwards." With two, three, or four on each side of the plate, there may be combined "a small 'turn up' of one or both heels." The die which has been referred to, consists, if intended to be used by hand, of a steel punch of a semicircular or nearly semicircular transverse section. It is held by a handle over the web of the shoe, and is then struck by a hammer. All the notches may be made at one time by means of a die or block of the same size as the shoe blank, provided with the desired number of punches according to the number of indentations to be made in the shoe. The blank may be placed upon a bed, and the die laid upon it and then brought forcibly down, so as to indent the metal by direct acting steam or hydraulic power.

[Printed, 8*d*. Drawing.]

A.D. 1866, March 31.—N° 922.

DAVIS, JAMES.—" Improvements in obtaining caustic alkalies " to be used as disinfectants, deoxidizers, and decarbonizers, and " the means by which the same are to be applied, as also for " applying the gases liberated in the process to the conversion of " iron into steel, and for the manufacture of manures."

The caustic alkalies are produced by burning "the alkaline " earthy carbonates, lime, and magnesian lime, either separately " or together " in "kilns, retorts, and reverberatory furnaces."

The alkalies mixed with water may be used with charcoal eliminations, or without, as a disinfectant, and, amongst other things, for dipping sheep, dogs, and other animals.

[Printed, 4*d*. No Drawings.]

A.D. 1866, April 5.—N° 976.

ELLISON, EDWARD.—(*Provisional protection only.*—" Preventing and curing disease in cattle," more especially a certain " defect in the nervous system " and "weakness in the spinal " cord, or automatic brain," produced by a vitiated state of the blood resulting from an unhealthy deposit on the hide or skin of the animal, more particularly that portion of it covering the nervous system radiating from the spinal cord.

The hide of the animal is thoroughly cleansed " by currying or " combing and brushing; then rubbing it over with a diaphoretic, " such as turpentine, to open the pores of the skin." A tonic (or if required a purgative) is then administered to strengthen the nervous system. The defect in the blood is then rectified " by " pumping or injecting into the veins or ducts to the heart, a " fluid composed of the red globules and serum of blood taken

" from healthy animals, and also a diluted solution of salts if " necessary, the nervous system of the spinal cord is to be well " rubbed with a tonic." A warming plaster is then placed over the spinal cord, and this is kept warm by a heating apparatus placed over the back of the animal.

If these operations are not effective, a galvanic battery is applied.

[Printed, 4*d*. No Drawings.]

A.D. 1866, May 4.—N° 1261.

HOPE, JOHN GRAHAM.—(*Provisional protection only*.)—" An " improved composition for destroying vermin on sheep and " other animals, and for preserving them therefrom."

Two parts of brown grease obtained from the refuse of wool are melted in a suitable vessel, half a part of gallipoli oil is then added, after which half a part of cod oil or foots is introduced. When these ingredients are thoroughly mixed, half a part of light pitch oil is mingled therewith. The composition is now raised to a temperature varying from 180 to 200 Fahr., after which one part of naphthaline is introduced. The whole mixture is maintained for a few minutes at the above temperature to allow the naphthaline to dissolve; after which it is run off into receivers and allowed to cool, when it is fit for use. It may be applied by hand or with a brush.

[Printed, 4*d*. No Drawings.]

A.D. 1866, May 4.—N° 1274.

HOPE, JOHN GRAHAM.—" An improved composition for de" stroying vermin on sheep, and other animals, and for preserving " them therefrom."

In preparing this composition it is preferred to employ the ingredients in the following proportions :—" One part of brown " grease from the refuse of woollen manufactures ; one and a half " parts of gallipoli oil ; one and a half parts of fish oil ; two " parts of light pitch oil ; one part of naphthaline ; and one part " of alkali."

" To form a still more effective composition the foregoing " ingredients may be varied to the following proportions " :— Two parts of brown grease ; two parts light pitch oil ; one part of gallipoli oil, or " foot's " oil ; one part of fish oil or " foot's " oil. These ingredients are heated together, after which are added one part of naphthaline, and one part of alkali. The compound thus prepared may be used as a disinfectant.

In place of using light pitch oil alone, a mixture consisting of one half of pitch oil, and the other half of shale, or green oil, may be used without the light pitch oil. The alkali preferred to be used is one half soda and one half potash.

[Printed, 4*d*. No Drawings.]

A.D. 1866, May 11.—Nº 1360.

CLARK, William. — (*A communication from Albert Sayles Wilkinson.*)—" Improvements in shoes and other appliances for " the protection of the feet and ankles of horses and other " animals."

This invention consists in a mode of attaching the two plates of double shoes to each other by slow taper rivets; the rivet tapering through its entire length before it is riveted in.

Also in a " method of removing the inner upper edge of a shoe " which in ordinary horse-shoes is done by bevelling off the said " edge. Also in an improved rubber device for preventing sand and " grit from working in between the inner edge of the shoe and the " foot, which consists in a rubber air cushion secured at the said " inner upper edge of the shoe. Also in providing the outer edge " of the shoe with a rubber fender to prevent cutting, clicking, " forging, overreaching, &c. Also in riveting calkins to the lower " plate of a double shoe by taper or common rivets, so that the " said calkins when worn out may be removed from the said " lower plate and new calkins riveted on." " Also in combining " with the taper rivet a portion of the common horse nail for " securing the shoe to the foot, so that the taper rivet portion " acts as a head for the horse-shoe nail. Also in providing a detachable shoe which is secured to the foot by clips and clamping " bands with a false bottom plate."

Also " in a shaping form to facilitate the construction of the " clamping bands, clips, and other parts of such shoes. Also in " attaching a thin plate of steel or other suitable metal to a shoe " in such a manner as to practically extend the shoe inward to " cover or more fully cover the sole of the foot; and further to " afford increased facilities for treating certain ailments." " Also in " an improved adjustable calk which has a pair of arms extending

" upward and each arm terminating with an inward flange, the " said arms reaching up, one on the inside of the shoe plate and " the other upon the outside, so that their flanges may get a hold " on the upper corners or edges of the shoe plate for holding the " calk to the said plate or bar of the shoe, the calks being placed " on the shoe by slipping them on at the heel of the shoe and " securing firmly in place by means of keys or screws. Also in " an adjustable calk having a tenon which fits into a mortise in " the bar of the shoe, and is secured in place by a screw key; also " in an adjustable toe calk and toe clip combined," the calk and clip being in separate pieces but riveted together when placed on the shoe. "Also in giving a shoe a round toe by taking " the toe calk from the front edge of the shoe where it has been " placed heretofore, and dropping it back to the rear edge of the " shoe plate or bar." "Also in a rolling shoe, which consists in " a shoe plate made fair and straight upon its upper surface and " its lower surface hollowed out or cut away at the front and rear " of the shoe in such manner as to make the lower face of the " shoe in general complexion a convex or rolling form, while portions of the lower face of the plate at the toe and heels are " allowed to remain and form calks. Also in an improved racing " shoe, which consists in a very light steel shoe having a continuous clip running around the shoe." "Also in a novel construction of heel clips whereby they are enabled to reach up " over the cornets and get a good sustaining hold of the foot, so " that the shoe is secured to the foot by the clips alone without " the aid of other fastenings." Also "in combining a continuous " calk with a continuous clip, the calk being wholly upon the " inner or the outer edge of the bar." Also in providing a shoe with a high and wide toe clip and with curved or semicircular heel clips, and then attaching the shoe by one or two nails, both on one side of the foot. Also in attaching a "shoe of such construction to the foot with straps of flexible material instead of nails, " so that the shoe may be adjusted or removed from the foot with " great readiness, and be used as a 'sandal' shoe for temporary " or regular service. Also in a hinge-jointed shoe having a hinge " joint, whose pin passes through the lower plate, and has a " tapering head of the full thickness of the said plate," "and in " securing this class of shoe to the foot by means of a toe clip " and by a single nail or screw in each heel of the shoe, or by a " toe clip and heel clips of such form that the nail or screw fasten-

“ ings are dispensed with and the shoe made an adjustable one,
“ and in making an elastic connection between the heels of the
“ shoe by means of steel springs or by other elastic material, such
“ as rubber. Also in modifying the construction of shoes for
“ contracted feet, so that they may be worn at all times,” “ which
“ modification consists in protecting the expanding screw by
“ placing it well up beyond the line of wear and dropping it in
“ between the heel clips, so as to be thereby shielded from blows,
“ and in providing each end of the expending screw with a jam
“ nut, so that it shall remain securely in any position in which it
“ is adjusted, and in the use of heel clips of a semicircular form
“ curving in between the heels of the foot so as to get a good
“ hold thereof.” Also “ in applying rubber soles to horse-shoes
“ to prevent slipping on ice and pavements without the use of
“ calks; and also to give the shoe an elastic treading surface,
“ which saves the frame of the animal from shocks upon hard
“ roads.” A small lower plate is embedded in the rubber and the whole riveted to the upper plate of the shoe. The upper plate may even be dispensed with, and the lower plate embedded in rubber fixed at once to the hoof. “Hidden calkins” may be used to project through the rubber and effect contact with the road when sufficient pressure is applied.

Also “in providing a sponge stopping, which is so shaped
“ as to correctly fill the hollow of the foot, and having a
“ V-shaped notch cut in its rear side, which fits onto the
“ sharp front of the frog and holds the sponge from getting
“ crowded out of place, and in a similar shaped air cushion or
“ solid rubber cushion having a rubber flange for securing it to
“ the shoe, and having a flap on its rear side for drawing up behind
“ the heel to prevent dirt from entering at the heel and
“ getting between the stopping and the foot; also in a thin
“ metallic plate” “ for securing the stoppings in the shoe in an
“ adjustable manner, and for protecting the stoppings and the
“ foot from injury; also in encasing a thin metallic retaining plate
“ in rubber for protecting the foot or the stoppings, the said retaining
“ plate or shield having a rubber flange for securing it to
“ the shoe, and also having a rubber heel flap attached for protecting
“ the heel and for excluding dirt, sand, and grit from the
“ sole of the foot; also in a fetlock hoop or sleeve made of rubber
“ or other material having the required flexibility and elasticity
“ so that the hoop may be sprung on over the foot and then by

" contraction adjust itself to the joint or leg with a sufficient " grasp to be self-sustaining thereon ; and also in a modification " of the same in which the hoop is cut and is attached to the leg " by buttons or by elastic strings, and when so attached to the " joint the body of the hoop, owing to its elasticity, conforms to " the shape of the limb and makes a symmetrical fit, and grasps " the joint as before to keep the hoop in place."

[Printed, 2*s*. Drawings.]

A.D. 1866, June 4.—Nº 1547.

SAINTY, John.—(*Provisional protection only.*)—" Improve- " ments in the construction of horse-shoes."

The improved shoe will expand with the hoof of the horse, and adhere to the hoof without the application of nails or like attachments. The shoe is formed of angle or L-shape steel, bent so as to embrace and clip the hoof tightly. The sole is slit at several parts in the line of the curve of the shoe, and laterally from the middle of those slits to the edge of the sole to impart elasticity. Studs or plates are riveted to the sole, so as not to interfere with the elastic action of the shoe. The toe is left without studs or plates. A layer of indian rubber is inserted between the plates and soles. " Instead of using buskins for horses fitted with " these shoes and addicted to cutting their legs," the india-rubber layer is brought up over the rim of the shoe at the part required, and secured with a rivet. In applying the shoe it is held open by a pair of plyers until it is fitted to the hoof. The plyers are then removed and the shoe closes tightly over the hoof.

[Printed, 4*d*. No Drawings.]

A.D. 1866, July 5.—Nº 1780.

GEDGE, William Edward.—(*A communication from Joseph Jules Falatieu.*)—" Manufacturing, by the aid of a special ar- " rangement of cylinders or rollers, a novel sort of bar or rod iron " suitable for making horse-shoe nails."

Bars of iron of a suitable size and form are passed through rollers so grooved as to leave on the bar or rod, at proper intervals, a double boss, knob, or protuberance, which is intended to form the head of the nail, the thinner part being for the point. The iron bar thus prepared is cut through by shears. The nail is then finished by machinery or by hand.

[Printed, 8*d*. Drawings.]

"In order to prevent the blank from curling or being bent "laterally or upward or downward at its toe during the process "of bending such blank, there are two jaws" projecting from the front end of the "former."

[Printed, 8*d*. Drawing.]

A.D. 1866, August 14.—N° 2080.

GEDGE, William Edward.—(*A communication from Charles Jean Baptiste Peillard.*)—"An improved horse-shoe."

This improved shoe is cut at the toe "by a V-shaped section," the two parts of the shoe touching in one-third of the hind part of the section of the shoes. The division lessens the strength of the shoe, but this defect is remedied by four tongues or toe pieces, two placed right and left of the section and two others raised at the inner angle of each "sponge;" for large feet, as those of dray horses, an additional tongue is raised on each side of the quarters. The shoe may be modified as follows:—

"The section instead of terminating in a V starting from one-"third of the hind part of the section" may have a re-entering part of a semicircular shape also commencing at the third of the hind part of the section; thus there will be a sort of notch which will render the shoe stronger by increasing the points of contact of the two branches at the same height. The tongue pieces may be dispensed with. This form of shoe allows the hoof to expand without the nails being moved, and renders it less subject to exfoliation.

[Printed, 10*d*. Drawings.]

A.D. 1866, August 29.—N° 2225.

DICKINSON, John Charles.—(*Provisional protection only.*)—"An improved dipping mixture for sheep and lambs."

This mixture, used to destroy all parasites, such as infest the wool of sheep and lambs, and also for the cure of the scab, is composed as follows:—Light pitch oil, 100 lbs; lime water, 50 lbs; cold water, 50 lbs; soft soap, 16 lbs; fat or lard, 11 lbs; pearlash, 4 ozs. These ingredients being well mixed together, about one pound of the mixture is used to every 40 lbs. of hot or cold water. When used for the "scab" in sheep or lambs, tobacco juice or paste is added to the above.

[Printed, 4*d*. No Drawings.]

A.D. 1866, December 18.—Nº 3328.

LAKE, William Robert.—(*A communication from Arlon Man Polsey.*)—" Improvements in nails and in machinery for manu-" facturing the same."

" The first part of the said invention relates to an iron or steel " nail in which the head is left substantially in that condition of " softness produced by hot working, while the shank in left in " that condition of hardness, smoothness, and rigidity which is " produced by rolling it substantially throughout while cold; " nails produced by this method are superior for many purposes " (especially for shoeing horses) to any others ever before produced, " because the whole shank of the nail is rigidified and will not " readily bend in any part under the action of a hammer, as nails " will often do when left in the condition produced by hot work-" ing, especially when the metal is of good quality; moreover, " the cold rolled shanks are free from the scale produced by hot " working, and have a smoothness superior to that resulting from " any other process, which smoothness facilitates the driving of " the nails. The softness of the head of this improved nail " facilitates its fitting into such grooves as are made in metal shoes " for animals, the head yielding and 'up-setting' so as to fit " and bear firmly in its bed.

" The second part of the said invention relates more particularly " to mechanism for producing these nails from the blanks, and " consists in so arranging and operating each pair of a series of " pairs of die rolls, with reference to the other pairs of the said " series, that the nail blank shall have its sides and edges acted " on alternately without turning the said blank on its axis, and " that the nail shall be passed onward by each pair of die rolls, " and shall be by them delivered to the action of the next suc-" ceeding pair, by which pair it is seized before being released by " the preceding pair, and so on through the series of pairs of rolls. " Where the article to be drawn and shaped is substantially " rectangular in cross section, each pair of rolls is placed at right " angles to the pair which next succeeds in the drawing and " shaping operation; but this invention is not confined exclu-" sively to such right-angled arrangement, for if the article to be " drawn and shaped is of other cross sectional form, the pairs of " rolls may be placed at such angles with relation to the other " pairs of the series as will act successively on the different sides

" or faces of the article, it being sufficient to illustrate the said " invention that two or more pairs of die rolls shall be placed at " angles with each other, the said rolls having the necessary relation to the form of the article to be drawn and shaped. The " said die rolls act to positively pass or feed onward from one " pair to the other the article in the manner before stated, and " operate on the different faces of the said article to cause it to " approximate more and more nearly to the shape desired at each " successive passage through the pairs of die rolls, and without " turning the said article on its axis as has been heretofore practised in drawing and shaping by successive passes through " series of die grooves made in one pair of rolls.

" The third part of this invention relates to straightening, " pointing, and finishing that class of horse-shoe nails which are " produced by cutting each blank from a sheet of metal and " drawing down the shank of the said blank to form and toughen " the point by means of a series of roller dies or die grooves. The " mechanism for accomplishing this may be employed either " separately or in combination with the rolling dies already " described in the second part of this invention. As the action " of these dies leaves the blanks more or less bent and somewhat " imperfect at or near the points, they require a slight trimming " and a setting of the finished point to give it a sort of chisel " termination. This part of the said invention consists chiefly in " effecting the straightening of the edges of the nail by the action " of rolls and moveable blocks, and in combining with these rolls a " guide or throat piece, through which the nails are fed from the " rolls, the action of this guide in connection with the action of " the rolls straightening the broad faces of the nail. This part " of the said invention also consists in the mechanism for chamfering the nail at the point, in combining with the straightening " and pointing mechanism a cutter to trim the end of the said " nail, and in so arranging certain straightening and pointing " mechanism with reference to the roller dies which roll the blank " into general shape, that the nails are automatically delivered " from the die rolls to the straightening mechanism."

[Printed, 1*s*. Drawings.]

A.D. 1866, December 29.—N° 3433.

NAPIER, JOHNSTONE.—" Improvements in the preparation of " food of a substance to be employed in place of malt and for the

" medication of food for animals." Treating wheat, barley, or other straw, bean or pea hulse or haulm, also turnips, mangolds, beet roots, potatoes, and the flesh of animals, " to obtain a mucilagenous " and farinaceous or preserved food for human use and for malt- " ing." The straw or hulse is cut into short lengths and saturated with water, having an ounce of soda in each gallon of water; the chaff is then steamed and pulped between revolving cylinders and plates; the chaff is then placed on a board, and upon it a layer of flour " of a like nature to the straw or haulm." If intended for cattle a small quantity of linseed, wheat, oaten or barley meal, bean, pea, or Indian corn or rice meal, or sago, arrowroot, bruised and mixed together with sugar, salt and spice, nutmeg, allspice, cloves, cinnamon, or ginger, any of them or all of them, without the straw chaff, may be thus treated, and then another layer of each until the desired thickness is produced. The mass of blocks is submitted to hydraulic pressure, and when sufficiently consolidated and thoroughly dried and hardened they are broken into small pieces and are in a condition for sale.

[Printed, 6*d*. No Drawings.]

APPENDIX.

A.D. 1801, January 23.—N° 2466.

VAZIE, Robert.—" An improvement in the constructing, con- " struction, and application of a gun, by means of removing " the touch hole from the side to the centre of the butt end of " the barrel, and forming therefrom a cylindrical communication " to and in a direction with the pan, and also by the addition of " a slide or shutter in the front of such communication, which " when close preserves the priming dry; which gun, when " mounted on a saddle or pad firmly fixed with strong elastic " girths on a horse or other animal, forms a complete horse " swivel, and is whilst in that situation discharged, the horse " being enabled to stand, notwithstanding the shock occasioned " by the discharge, by his feet being preserved perfectly sound

" which is effected by removing the nails from the tender part " of the feet, and placing sandals of a nourishing quality betwixt " the hoofs and shoes."

The furnace and machinery, which are described at length, " may be used in constructing articles in general which are made " of metal;" but the part chiefly connected with this series is " the means whereby the horse is enabled to stand upon his " feet, notwithstanding the shock occasioned by the discharge " of the gun." The shoe is fixed with four nails to the fore part of the hoof, and with a clamp on each side of the hind part, " the upper ends of which clamps are turned inwards three " sixteenths of an inch, to take a firm hold of the hoof; the " length and heighth of the clamps must accord with the size, " form, and nature of the hoof." One of the figures " represents " two parts composing a sandal for one foot, which is placed " between the hoof and shoe, and secured from removing by " being rivetted to the hind part of the shoe, and by the nails " that fix the shoe on the fore part passing through them. These " sandals are made of felt, and after they are formed are boiled " in a nourishing liqued, whereof the component parts are, of " turpentine, half a hundred weight; of pitch, half a hundred " weight; of hogs lard, half a hundred weight; & of charcoal " dust, one heaped bushel, which bushel in the body contains " eight gallons and one quart of water, and is nineteen & half " inches diameter from outside to outside across the top. The " heap is formed a regular cone, of which the perpendicular " heighth is seven inches, which heighth is proved by the gage " or tongue" " which is suspended and moves on a semi-" circular bow, that by means of a joint at each end is laid " down on the outside of the measure."

[Printed, 8*d*. Drawing.]

A.D. 1861, April 29.—N° 1073. (* *)

DESPLAS, Jean Baptiste Hubert.—(*Provisional protection only.*)—" A so called hypocampaphile, or elastic apparatus whereby " the legs of running horses are protected from accidents." This knee-cap is made of india-rubber and gutta percha vulcanized and of different thicknesses " according to the rubbing parts of the " horse:" it is circular, and fits round the leg above and below the knee or fetlock, and is coloured to suit the colour of the horse.

The upper ring is of triple thickness, the shield of quadruple, while the parts below the upper ring and above the lower ring (which is of double thickness) are of single thickness, to allow the free play of the muscles. The piece, which binds all these parts together, is of double strength. Modifications will be required in making protectors for the leg or fetlock.

[Printed, *4d*. No Drawings.]

CHRONOLOGICAL LIST OF BOOKS RELATING TO FARRIERY, VETERINARY MEDICINE, &c.

[This list has been compiled from the Catalogues of the British Museum, the Veterinary Medical Association, and other Libraries, and from various bibliographies. The sources whence some of the titles have been derived is mentioned. The initials B. M. signify that the book is in the British Museum; V. M. A. that it is in the Library of the Veterinary Medical Association in Camden Town; P. O. that it is in the Patent Office Library; W. B. B. that the book has only been found in Watt's Bibliotheca Britannica; B. A. that the title is given in the Bibliographic Agronomique. The list of the MSS. is taken from the MSS. catalogues of the Museum. It must be understood that the list makes no pretence at completeness; also that no attempt at selection has been made. Any book bearing on the subject that was met with has been inserted, but there are doubtless very many books, and those, perhaps, of considerable value, omitted. No special search has been made after foreign books, but the names of such as occurred have been included.]

List of MSS. in the British Museum relating to Farriery, the Veterinary Art, &c.

[The Numbers are those appended to each Title in the B. M. Catalogues.]

MSS. in Sloane Collection.

3741. **Bressy.** Méthode pour bien dresser les Chevaux. Dédié à M. du Plessis.

2757. **Pasquel Caraccioli.** Sopra i Cavalli; el modo d' Ammoster, il Maneggiar, &c.

1074. 3. **M. Facio.** Ricettario di Marischalchia.

2116. 1. **Pet. Ant. Ferrara.** Interpretation dele briglier, &c.

————————. Die Regule, a German tract on horsemanship.

2238. **Thos. Hodges.** Medicines for horses.

1074. 4. **Hercul. Malatesta Romanus.** Avertimenti molto utili, e necessare per accomodare ogni sorte di Cavalli.

1034. **Markham.** Faithful Farrier. Lond. 1690. MS. notes.

4538. 477. **Dr. Mortimer.** Account of the distemper amongst cattle, near London, with some receipts of his and others. 1745.

2116. 2. **Giov. Battista Pignatello.** Libro di Remedii di Cavalli, fatto à Napoli.

5831. **Michel Rocca.** Manescalcheria.

Anonymous.

745. Libri duo de re Veterinariâ, collecti quoque fuerunt ex operibus Apsyrti . . . . . . (græce.)

2016. Livre de la grande Mareschalerie.

1074. 1. Regoli di cognoscere le qualita de Cavalli, tanto polledri, come valli fatti.

2. Nomi di Cavalli.

5. Il vero modo d' Imbrigliare ogni sorte di Cavalli.

2127. Trattate de i Colori di Cavalli.

2903. 40. Directions respecting buying, and the method of keeping horses.

1764. Directions to know a good horse.

3465. Méthode pour apprendre à Monter à Cheval, avec plusieurs Recettes pour guérir les Maladies qui arrivent aux Chevaux.

686. 5. Directions to know a good horse, with remedies against most of their diseases. Sec. xv.

2285. 8. Medicines for alle evelis of hors.

394. 8. Ad cognoscendum Equum, et Remedia pro Morbis eorum. Sec. xiii.

2584. 9. Remedies for the diseases of horses. In perg. Sec. xiv.

566. 2. Receipts for the disorders of horses, beast, and sheep.

2569. 5. Medicina Veterinaria.

3796. 2. Receipts for horses and cattle.

333. 4, Medicines for disorders of horses.

3328. 8. Receipts for medicines for horses.

107. 1. A treatise of the nature of horses, their diseases, and cures.

1069. 5. Receipts for some diseases of horses.

908. 8. Receipt for a horse before he be turned to grass, and for the new disease in horses.

372. 3. Med. Veterinaria. Sec. xiv.

2721. 1. Medicines for some disorders of horses.

Receipts for curing dogs of the mange, and other disorders.

1137. 3. Remedies for the diseases of horses.

3099. 1. The general cure of the horse.

393. 7. Various receipts for the diseases of horses.

2226. A book of the diseases and maladies of horses and their cures.

4434. 202. Account of a stone taken out of a horse.

4844. A receipt to recover sheep of the rot. P. 245.

1950. 10. Terms of horsemanship.

MSS. IN THE HARLEIAN COLLECTION.

Cod. 3535. An old medical collection, written on paper. Art. 1. A Tract more ancient than the others, in two books, on the diseases of horses. The chief part of Chap. 1, Book I. is wanting. It occupies 37 leaves. The language is singular. The introduction to the second book is, "Iza incumenzanu li "capituli dilu fecundu libru di peroden perlandu, dili plalzi ki "avennu ali cavalli." At the end the author says: "Et "certamenti tutti killi cosi ki cu pinsay ki sussiru necessari ali "cavalli scripsi in kistu libru bastivilimenti."

Art. 3. Another book, in the same language, on the diseases and cures of horses.

Cod. 5107. Medicinal Receipts for Horses. Fairly written, with some loose papers inserted, not belonging to the book.

Cod. 6042. A Book with Medicinal Receipts. At the beginning there are a few Receipts for Distempers in Cattle. It contains 229 written pages, and a table of contents is prefixed.

Cod. 6398. A Book in 12mo., written upon vellum, entitled, "The Book of Marchalsi," wherein Remedies are prescribed for the cure of Distempers in Horses, &c., together with directions for choosing a good Horse, and the management of him. Probably of the 15th or early in the 16th century.

MSS. IN THE COLLECTION OF ADDITIONAL MSS. IN B. M.

Veterinariæ Medicinæ Scriptores Græci. 5108.

Recipes for diseases in horses and cattle. 5540, f. 21; 5801, p. 461; 5806, f. 46, b.; 5811, f. 77, b.

Tractatus de morbis, ac signis et curis equorum. *Ital.*; with colored figures. 15,097, f. 60. 15,098.

Treatise on Veterinary Medicine. *Arabic.* 14,050.

Treatise on the diseases of horses, &c., with drawings. *Persian.* 14,057.

PRINTED BOOKS.

1472. Scriptores rei rusticæ; Marcus Priscus Cato, Marcus Terentius Varro, Lucius Junius Moderatus Columella et Palladius Rutilius Taurus Ormilianus. Venetiis, 1472, fol. B. A.

[A very rare and curious work, finely executed.]

1472. Auctores de re rustica, accedunt emendationes brevissimæ priscarum vocum Catonis, Varionis, Columellæ et Palladii. Venitiæ, 1472, fol. Second Edit., Rhegio. 1482, fol. Later edits., Paris, 1533, fol. Lyon, 1535. 8vo. Cologne, 1536. Paris, 1543, etc. B. A.

1488. Vegetius, Flavius Renatus. L'Art de Chevalerie selon Vegece. *Black Letter.* Paris, 1488 fol. B.M.

[105 leaves, without pagination or catchwords; register sigs. a–n, in eights, except m, which has 6 leaves and n, which has 5, preceded by 6 preliminary leaves. Printed in double columns, with 33 lines to the full column. Translated, or rather compiled, from Vegetius and others by J. de Meung, called Clopinel.]

? 1520. Propertees and Medecynes for a Horse. 4to.

[Printed without a date by Wynkyn de Worde.]

? 1520. A lytell Treatyse of the Horse, the Sheep, and the Ghoos. 4to.

[Printed by Wynkyn de Worde; no date.]

1524. Vegetius, Flavius Renatus. Artis Veterinariæ sive Mulo medicinæ libri quatuor. Basil, 1524. 4to. and 1574, 4to. Curante J. M. Gesnero [Ausoni Popinæ de instrumento liber, etc.] Mantremii, 1781. 8vo.

[It seems uncertain whether this Vegetius is identical with the writer on military matters who lived in the 4th century, A.D. All the above edits., except that of 1524, are given by Watt, the 1524 one is in B. M.]

1530. Ruellius, Johannes (1474–1537). Veterinariæ Medicinæ. Libri duo. Par., 1530, fol. Gr. Bas., 1537. 4to.

[? Are these two the same work?]

1530. Beneventanus Litorius De Medicinâ Veterinaria. Græce, Lat. interpret, Jo. Ruellio. Par., 1530, et Basil, 1573. 4to.

1533. Bourbon, or Bourbonius, Nicholas, a Latin poet of France. Didactic poem on the Forge, entitled Ferrarie. 1533. 8vo. W. B. B.

1537. Archedemus, a Greek writer. De Medecinâ Veterinaria, per Ruellium. Paris, 1530; et Græce. Basil, 1537. 4to. W. W. B.

1537. Omilius Hispanus. De Medicina Veterinaria, Græce. Bas., 1537. 4to. Lat., Par., 1560.

1539. De Tractandis equis, sive Xenophontis libellus de re equestri. Tubinga, 1539. 8vo. B. A.

1547. Columbre, Agostino. I tre libri delle natura dei cavalli, e del modo di medicare le loro infermita. Vennegia, 1547. 8vo.

1563. Masse. L'Art vétérinaire, ou Grande Maréchalerie. Paris, 1503. 4to. B. A.

[A translation of the Greek veterinary authors who were afterwards again translated by J. Jourdain, in 1647, under the title "La Vrai Connaisance du Cheval," etc.]

1565. Blundeville, Thomas, of Newton Flatman, in Norfolk. The fowerr chiefest offices relating to Horsemanshippe; that is to say, the office of the Breeder, of the Rider, of the Keper, and of the Ferrer. To which is added, the order of Dietynge of Horses, as well when they reste as when they travel; as also the order of curing Horses' Diseases; together with the causes of such diseases; the signs how to know them; and finally how to cure them. *Black letter.* 4 pts. London, 1565, '66, 4to. 1570? 4to. 1689. 4to. B. M.

1572. Remedies for Diseases in Horses. Approved and allowed by divers verie learned Mareschalles. Lond. 1572. 4to.

[Printed by Thomas Purfoot.]

1584. Denham, Henry. Translation of the Ιππικὴ of Xenephon. London, 1584.

1594. Markham, Gervase, Jarvise, or Gervas, an English author temp. James I. and Charles I. How to chuse, ride, traine, and dyet, both Hunting Horses and Running Horses; and a Discourse on Horsemanship, with a newe addition for the Cure of Horses' diseases. *Black Letter.* Lond., 1594. 4to. 1606. 4to.

1595. **Markham, G.** A Discourse of Horsemanshippe; wherein the Breeding and Ryding of Horses for service, in a breef manner, is more methodically sette downe than hath been heretofore, &c.: also the manner to chuse, trayne, ryde, and dyet both Hunting Horses and Running Horses; with all the secrets thereto belonging discouered: an art never heretofore written by an author. Lond., 1595. 4to.

1596. **Mascall, Leonard.** The First Book of Cattel; wherein is shewed the Government of Oxen, Kine, Caulfes, and how to use Bulls and other cattel to the Yoake and Fell, with remedies; the seconde Book treateth of the Government of Horses; the thirde Book intreath of the Orderynge of Sheep and Goates, Hogs and Dogs; with such remedies to helpe moste diseases as may chaunce unto them. Lond. 1596. 4to. 1627. 4to. W. B. B.

1599. **Heroard, Jean.** Hippostologie, c'est à dire, Discours des Os de Cheval. Par. 1599. 4to. B.M.

1600.? **Blundeville, T.** A Newe Book, containing the Arte of Ryding and Breaking great Horses; together with the shapes and figures of many and divers kynds of Byttes, mete to Serve divers Mouths. Very necessary for all gentlemen, souldyours, serving-men, and for any man that delighteth in a horse. Lond. 8vo.

1608. **Caracciolo, Pasquale.** La gloria del cavallo, civè dell' allevare, custodire, e curare e maneggiare i cavalli: con tre libri di Gio. Antonio Cito, delle infermita e cura del cavallo e del bue. Venezia, 1608. 4to.

1609. **Crosane, Nic. Morgan de.** Traité des Chevaux, de leur nature, usage, maladies, rémèdes, et de la manière de les élever. Londres, 1609. B. A.

1610. **Markham, G.** Cure of all Diseases incident to Horses. Lond., 1610. 4to.

1616. **Markham, G.** M.'s methode, or epitome: wherein is shewed his approved remedies for all diseases whatsoever incident to Horses, Oxen, etc. Lond., 1616. 12mo. B.M.

[The copy in B. M. is interleaved, and has MS. notes.]

1617. Markham, G. Cavallarice; concerning Horses and Horsemanship, as much as it is necessary for any man to understand, whether he be horse-breeder, horse-ryder, horse-hunter, horse-runner, horse-amber, horse-farrier, horse-keeper, coachman, smith, or sadler. Together with the discovery of the subtil trade or mystery of hors-coursers, and an explanation of the excellency of a horses' understanding; or how to teach them to do tricks like Bankes his Curtall: and that horses may be made to draw dry foot like a hound. Secrets before unpublished, and nowe carefully set downe for the profit of this whole nation. Newly imprinted, corrected, and augmented, etc. 8 pts. Lond., 1617. 4to. B. M.

[Each part has a special title-page and pagination, but the register is continuous].

1620. Mascall, Leonard. The Gouernment of Cattell. Divided into three Bookes. The first, entreating of Oxen, Kine and Calues . . . . The second . . of the Gouernment of Horses, with approved Medicines against most Diseases. The third . . of Sheepe, Goates, Hogges, and Dogges, with true Remedies . . . Also . . instructions for taking of Moales, etc. Gathered by L. M. *Black Letter*. London, 1620. 8vo. B. M. V. M. A.

[Each part has separate title page and pagination. They were probably published separately, as part 2 is dated 1619. Another copy in B. M. is without date on the first title page, the second has no date, and the third is dated 1600. The V. M. A. has another and later edition of 1680.]

1623. Markham. M.'s Methode or Epitome: wherein is shewed his approved remedies for all diseases whatsoever, incident to Horses, and they almost 300, all cured with 12 medicines only. Also for curing of all Oxen, Kine, Poultrie, and the like. By G. Marrham [sic]. Third edition, corrected by the author. Lond., 1623. 8vo. 7th edition, 1641. 12mo. Tenth edition, corrected by the author. 1671. 8vo. B. M.

[The 1671 edit. has woodcuts, and a second title-page with engraved border bearing date 1672.]

1623. Aldrovandus. De Quadrupedibus. Francofurti, 1623.

1624. Vegetius Renatus, Flavius. Regole per Medicar cavalli, buvi, et altri animali. Nuovamente corrette, &c. Romæ, 1624. 8vo. B. M.

1635. **Markham, G.** Faithful Farriery; discovering some Secrets not in print before. Lond., 1635. 8vo. 1638. 8vo. 1649. 4to. *Under the title of*, The Maister Peece of Farriery; Contayning all knowledge belonging to the Smith, Farrier, or Horse-leech: touching the curing all Diseases in Horses. Now the fifth time newly imprinted. Lond., 1636. 4to. 1710. 4to. With a Treatise on Curing the Diseases of Lesser Cattle. Lond., 1656. 1675. 4to.

[1636 edit. in B. M.]

1636. **Grimes, Thomas.** The Honest and Plain-dealing Farrier. London, 1636. 12mo. W. B. B.

1638. **Markham G.** Faithfull Farrier. Wherein the depth of his Skill is laid open in those principall and approved secrets of Horsemanship, which the Author never published, but hath kept in his breast, and hath been the glory of his Practice. Lond., 1638. 12mo. 1647. 12mo. B. M.

[MS. notes to B. M. copy.]

1639. **Markham, Gervayse.** The complete Farriar, or the King's Highway to Horsemanship, experimentally unfolding—1. The dyeting and governing of the Running Horse. 2. How to order, feed, and keep any Horse for War, Pleasure, Hunting, or Travell. 3. How to know the age of any Horse. Lastly, certain rare and approved secrets for the cure of the Worst infirmities in Horses. London, 1639. 12mo. B. M.

[A copy in the Sloane collection of MSS., now in B. M., is bound up with M.'S "Faithfull Farrier," and contains some M.S. notes.]

1647. **Jourdain, Jean.** La vrai connaisance du Cheval, ses maladies et ses remèdes par I. I. D. E. M. Avec l'anatomie de Ruini, contenant 64 figures. Paris, 1647. Reprinted in 1864. B. A.

[A translation from the Greek.]

1648. **Poole, William.** The Country Farrier. Lond., 1648. 4to. 1650. 1655. 12mo.

1651. **Gray or Grey, Thomas de.** The Compleat Horseman and Expert Farrier, in 2 Books. 1651. 4to. Lond., 1656. 1670. 4to.

1654. Constantinopolitanus, Demetrius. De Curâ Accipitrum et de Curâ et Medicinâ Canum, Petro Gillio, interpr. Lugd. 1565. 8vo. Gr. Lat. cum variorum lectionibus et annotationibus, per Rivinum. Lips. 1654.

1655. Markham. The Perfect Horseman; or the experienc'd secrets of Mr. M.'s fifty years practice. Now published by L. Thetford, Lond., 1655. 8vo. Last edition corrected 1680. 8vo. B. M.

[With frontispiece in both editions.]

1658. Cavendish, William, Marquis and Duke of Newcastle. La Méthode Nouvelle et Invention Extraordinaire de dresser les Chevaux. Antw., 1658, fol. Lond., 1671–1757, fol., 1674, 8vo. Paris, 1745, fol. Swedish, Stockh., 1754, fol. The same, translated into English, under the title of,—A New Method and extraordinary Invention to dress Horses, and work them according to Nature; as also to perfect Nature by the subtilty of Art. Lond., 1667–1737, fol.

[Edits. 1658, 67 in B. M.]

1658. Cavendish, William, Duke of Newcastle.—Méthode et invention nouvelle de dresser les chevaux, traduite de l'Anglais de Guillaume et de Cavendisk, duc, marquis, et comte de Newcastle, avec figures en taille douce, exécutées par les plus habiles graveurs. Anvers, 1658, fol. B. A.

1660. Barrett, Robert. The Experienced Farrier. Lond. 4to. The same, 1660, 4to.

1664. Solleysel. Parfait Maréchal. . . . . édits Paris, 1664, 1718, 1733, 1680, 1775, etc.

[Solleysel died in 1680. M. Perrault wrote his *éloge* among those of the 100 celebrated Frenchmen of the 17th century.]

1667. Cavendish, W. Duke of Newcastle. A New Method and Invention to dress Horses, and work them according to Nature; as also to Perfect Nature by the Subtilty of Art, which was never found out but by William Cavendish, Duke of Newcastle. Lond., 1667, fol.

1670. Solleysell, Jacques. The Parfait Mareschal, or Compleat Farrier. Which teacheth, I. To know the Shapes and Goodness, as well as faults and Imperfections of Horses. II. The Signs and Causes of their Diseases, the means to prevent them, their Cure, and the good or bad use of Purging and Bleeding. III. The way to order and Preserve them when upon Travel, to Feed, and to Dress them. IV. The Art of Shoeing, according to a new design of Shoes, which will recover bad Feet, and preserve the Good . . . Written originally in French by the Sieur de Solleysel, Escuyer . . . and Translated from the last Paris Impression by Sir William Hope, of Kirkliston, Kt. Edinburgh, 1696, fol. Another edit. with Supplement by Sir. Wm. Hope. Lond., 1717, fol. 4th edit., 1729.

[Edits. of 1696 and 1717 in B. M. Watt gives title as follows:—Soleysell or Soleysell, Jacques de, Compleat Horseman; discovering the surest marks of the Beauty, Goodness, Faults, and Imperfections of Horses; the Signs and Causes of their Diseases; the true Method both of their Preservation and Cure; with Reflections on the regular and preposterous use of Bleeding and Purging: translated by Sir Wm. Hope; with Cuts, 1696, fol. The same, abridged by Sir Wm. Hope. 1711. 8vo. 1717 and 1729 edits. and 1711 abridgment in V. M. A.]

1673. Almond, Robert. English Horseman and Complete Farrier. Lond., 1673. 8vo.

1675. Markham, G. Master-piece, concerning all Diseases in Horses; with an Appendix concerning the Diseases in other Cattle. Lond., 1675. 4to.

1676. Lambert, James. The Countryman's Treasure; showing the Nature, Cause, and Cure of all Diseases of Cattle. Lond., 1676. 1685. 8vo.

1676. Markham, G. Cheap and good Husbandry, for the well-ordering of all Beasts and Fowls, and for the general cure of their diseases. Lond., 1631, 1648. 13th edition. 1676. 4to.

1677. Solleysel, Jacques de. Le véritable parfait maréchal, qui enseigne à connoistre la beauté, la bonté et les diffauts des chevaux . . . Cette sixième édition française, qui est la première Allemande, a esté augmentée de l'Abrégé de l'art de monter à cheval, composé par un des plus habiles écuyers de ce temps. Der wahrhaftig vollkommene Stallmeister . . Erste teutsche Edition. Genff, 1677 fol. B. M.

[French and German. The Abrègé has a distinct pagination.]

1677. Solleysel, Jacques de. Nouvelle Méthode de dresser les chevaux, en suivant la nature et même en le perfectionment par l'art, inventée par le duc de Newcastle, traduite de l'Anglais, avec des annotations, par de Solleysel. Paris, 1667. 4to. B.A.

1680. MARKHAM, G. The Perfect Horseman; published by Lancelot Thetford. Lond., 1680. 4to.

1683. SNAPE, ANDREW, Sergeant Farrier to Charles II. The Anatomy of an Horse; containing a full and exact Desciption of the Frame, Situation, and Connection of all his Parts, expressed in 49 copperplates; of Generation of Animals, of the Motion of the Chyle, and Circulation of the Blood. Lond., 1683. Fol. The same, Lond., 1687. Fol.

[1687 edit. in V. M. A.]

1688. MARKHAM. G. M.'s Master-Piece revised: containing all knowledge belonging to the Smith, Farrier, or Horse-Leach, touching the curing of all diseases in Horses. To which is added, the Country-Man's cure for his other Cattle . . . and now in this impression is added The compleat Jockey, containing methods for the training of Horses up for racing. 3 pts. Lond. 1688. 4to. B. M.

1694. L'Écuyer français qui enseigne à monter à cheval, à voltiger, à bien dresser un cheval; l'anatomie de leurs veines et de leurs os; la science de connaître leurs maladies, et des remèdes souverains et éprouvés pour les guérir, etc. Paris, 1694. 8vo. B. A.

1698. BIDLOO, GODFREY. Dutch Anatomical writer. A letter to Antony Leeuwenhoek, concerning the Animals which are sometimes found in the Liver of Sheep or some other Animals, in Low Dutch. Delft, 1698. 4to.

1706. STUBBS, GEORGE. Anatomy of the Horse. (Plates.) Lond., 1706, fol.

1707. DOUGLAS, JAMES, M.D., F.R.S. London Practitioner in Midwifery and Anatomy. Myographiæ Comparatæ Specimen; or, a comparative description of all the muscles in a man and in a quadruped (a dog), with an account of the muscles peculiar to a woman. Lond., 1707. 12mo. Edin., 1775. 8vo.

1710? RAMAZZINI, BERNARDIN, Professor of Physic at Padua, and Member of several of the Academies of Sciences in Germany, &c. Tracts relative to some Epidemics, both among Men and Cattle.

[? date, 1710. ? place, Patav. W. B. B.]

1712. **RAMAZZINI, B.** De Contagiosa Epidemia, quæ in Patavino Agro et tota fere Veneta ditione in Boves irrepsit, Dissertatio. Patav., 1712. 8vo.

1712. La connaisance parfaite des chevaux, contenant la manière de les bien gouverner, nourrir et entretenir en bon corps, etc. . . . . enrichi de figures en taille-douce. Paris, 1712. Reprinted 1780. 8vo. B. A.

1712. **DELCAMPE, SIEUR.** La Conoissance parfaite des Chevaux. Paris, 1712. 8vo. B. M.

1714. **LOGROSSI, CARLO FRANCESCO.** Nuova idea del male contagioso de buovi partecipata al Sig. Ant. Vallisnieri e da questo con nuove indicanti e proposti nuovi rimedj. Milan, 1714.

1715. **LANCISI, J. MARIE.** Dissertatio historica de boville peste, anni 1715. Romæ, 1715. 4to. B. A.

1720. **GIBSON, WILLIAM**, Veterinary Surgeon. Farriers' New Guide, containing, first, the Anatomy of a horse . . . with figures . . . on copper-plates. Secondly, an account of all the diseases incident to horses, with . . . methods of cure, &c. Lond., 1720, 1721, 1725, 1726, 1727, 1729. 8vo.

[The second part has in each edition a separate title page and pagination. Edits. of 1720, 1725, 1727 in B. M.]

1720 ? **MANGET, JOHN JAMES**, a Physician and writer of Geneva. Observations sur la maladie qui a commencé depuis quelques années à attaquer le gros bétail, n. d.

[A collection of the opinions of Genevese Physicians on the subject. ? date between 1720–30. W. B. B.]

1720. The Experienced Farrier. 1720. V. M. A.

1721. **GIBSON, W.** The Farrier's Dispensatory; in three parts, containing—I. A description of the medicinal Simples made use of in the diseases of Horses. II. The preparations of Simples . . III. . . Compositions and receipts, &c. Lond., 1721, 1726, 1729, 1734.

[Edits. 1721, 1726, 1734 in B. M. 1726, W. B. B.]

1722. **FRANCISCUS PHILIPPUS FLORINUS.** Œconomus prudens et legalis, oder allgemeiner, kluger und rechts-verständiger Haus-Vatter, bestehend in zehn Büchern. Nürnberg, 1722. fol.

[The fifth book relates to farriery.]

1722. **MARKHAM, G.** The Gentleman's Jokey and Farmer. Lond., 1722. 12mo.

1722. Gibson, W. Farriers' guide. 3rd edit., 1722. 8th edit., 1735. V. M. A.

1724. Garengiot, Réné James Croissant de, French Surgeon. Myotomie Canine et Humaine. Paris, 1724, 1728, 1750. 2 vols. 12mo.

[According to W. B. B. the last of these is much the most correct of the three.]

1726. Gibson, W. Dispensatory. 2nd edit., 1726. 3rd edit. 1729. 4th edit., 1734. V. M. A.

1727. Mondry, Salomon de, Dr. en Médecine. Remarques sur la mortalité des bêtes à cornes, contenant les instructions pour l'extirpation de la contagion, ou du moins pour en arrêter le progres, traduit du Hollandais par M. S. de M. Paris, 1770. B. A.

1729. Vanderback. The Horse. 1729. V. M. A.

1730. Burdon, William, Capt. The Gentleman's Pocket Farrier. Lond., 1730. 8vo. The same, with large additions and remarks by H. Bracken. Lond. 1735. 8vo. 4th Edit. 1748. 8vo. The same, revised. Armagh. 1806. 12mo.

[Edits. of 1730, 48, 1806 in B.M.]

1734. Saunier, Jean de. La parfaite connaissance des Chevaux, leurs bonnes et mauvaises qualités, leurs maladies et les remèdes qui y conviennent. La Haye, 1734, fol. B. A.

1735. Scriptores rei rusticæ veteres Latini, Cato, Varno Columella, Palladius, Vegetius de Mulo-medicina et Gargilii Martialis fragmentum, cum notis integris variorum, curante Matthia Gesnero. 2 vols., fig. Lipsiæ, 1735. 4to. B. A.

1737. Saunier. Traité de la connoissance des Chevaux. 1737, fol. B. A.

1737. Garsault, Francis Alexandre de. Translation of Snape's Anatomy of a Horse. 1737. 4to. W. B. B.

1737. Allen. Farrier's Assistant. Lond., 1737. 8vo. W. B. B.

1738. Bracken, Henry, M.D. Farriery improved, a complete Treatise upon the Art of Farriery. Lond., 1738. 8vo. Third edition. 2 vols. Lond., 1743. 12mo. Fifth edition. 2 vols. Lond., 1745. 12mo. Other editions 1763 and 1789.

[Vol. 2 of 3rd edit. and vol. 1 of 5th edit in B. M. Edits. of 1763 and 1789 in V. M. A. The same writer brought out several editions of Capt. Burdon's "Gentleman's Pocket Farrier."]

1740. The Gentleman's Practical Farrier; or the Traveller's Pocket Companion; a work founded on thirty years' experience. Lond. Becket. 8vo. 1760. W. B. B.

[No author's name in Watt.]

1743. Bracken, Henry, M.D. The Traveller's Pocket Farrier. Lond. 1742–1743. 8vo. B. M.

1743. Systême général de l'art d'élever et de dresser les Chevaux dans toutes ses branches. 2 vols. Paris, 1743, fol. B. A.

[Vol. 1 contains a translation of the Duke of Newcastle's book.]

1744. Charles, Dr. en Médecine. Observations sur la maladie contagienne qui règne en Franche-Comté parmi les bœufs et les vaches. Besançon, 1744. 8vo. B. A.

1745. An Account of the Epidemical Distemper among the Black Cattle. Lond., 1745. 8vo.

1745. Chomel, Jean Baptiste Louis, Physician to the King of France. Account of the Disease then epidemic among Cattle. 1745. W. B. B.

1745. Boyer, Jaen Baptiste Nicholas, French Physician. Memoir on the Diseases infecting the Cattle. A.D. 1745.

[This was sent to the Royal Society of London, and procured him a place among the foreign members. W. B. B.]

1745. Endelidrius, Severus, a native of Aquitaine, Rhetorician and Poet, circa 380 A.D. Carmen de Mortibus Boum, cum vet. Galliæ Theologorum opusculis a Pithæo. Paris, 1586. 8vo. A Jo. Weitzio et Wolf. Sebero. Francof, 1612. 8vo. A Jacobo Gronovio. Lugd. Bat., 1715. 8vo. A Gerard Onthovio. Groning. 1721. 8vo.

[This last edition contains a tract, De Judiciis Jehovæ; ex edit. Witzii et Seberi, Lugd. Bat., 1745. 8vo.; and is considered the *editio optima.* W. B. B.]

1745. Scheibeler, F. C. M. Sammlung merkwürdiger Abhandlungen über Thierkrankheiten. Hannover, 1745. 12mo. B. M.

1745. Raudot. Dissertation sur la Maladie épizootique des Animaux. 1745. B. A.

1746. Brocklesby, Richard, M.D. An Essay concerning the Mortality of the Horse and Cattle. Lond. 1746. 8vo.

1747. Bourgelat, Claude, Veterinary Surgeon, native of Lyons. Nouveau Newcastle, ou Traité de Cavalerie. Lausanne, 1747. 8vo. W. B. B.

1748. **Vegetius, Flavius Renatus.** English Translation of Vegetius Renatus of the Distempers of Horses, and of the Art of Curing them: as also, of the diseases of Oxen, &c. Translated into English by the Author of the translation of Columella. Lond., 1748. 8vo. V. M. A.

1748. An Essay on the Contagious Distemper among the Cattle. Lond., 1748. 8vo.

1748. **Bloudet.** Dissertation sur la Maladie épizootique des Bestiaux. 1748. 12mo. B. A.

1749. **Ellis, William,** of Little Gaddesden, in Hertfordshire. A compleat system of experienced Improvements made on Sheep, Grass-Lambs, and House-Lambs, or . . . The Shepherd's Sure Guide, &c. In Three Books. Lond., 1740. 8vo. P. O.

1750. **Bourgelat, C.** Élémens d'Hippiatrique, ou Nouveaux Principes sur la connoisance et sur la Médecine des chevaux. Lyons, 1750–51. 2 vols. 8vo. B. M.

1751. **Gibson, W.** A new Treatise on the Diseases of Horses, with efficacious remedies. Illustrated with 32 plates. Lond, 1751. 4to. 2nd edit., Lond., 1754. 2 vols. 8vo. B. M.

[1751 edit. in V. M. A.]

1751. **Fosse, Sieur de la.** A Treatise upon the true seat of the Glanders in Horses; together with the Method of Cure. Translated, with notes, by H. Bracken, M.D.; with cuts. Lond., 1751. 12mo. W. B. B.

1751. **Bridges, Jeremiah.** No Foot no Horse; or an Essay on the Anatomy of the Foot of a Horse, together with particular directions for the cure of the chief internal diseases the Horse is subject to. With plates. Lond., 1751. 8vo. B. M., V. M. A.

1751. Britain's Alarm from the Continuance of the Contagion among the Cattle; and other more afflicting and important Evils threatening and befalling us. Lond., 1751. 8vo.

1752. **Gray, T.** Expert Farrier. Lond., 1752. 8vo.

1753. **Hird, William, M.D.** Remarks upon Pestilence and Pestilential Diseases; interspersed with some Observations on the Mortality amongst the Horned Cattle;

wherein this heavy calamity, both from reason and analogy, is set in a new and clear light; with certain easy means of preservation and cure recommended upon rational and experimental principles. Lond., 1753. 8vo.

1753. A Probable Scheme for putting a final Stop to the Distemper among the Horned Cattle; and preventing the Ruin of Farmers while it continues; in a letter to a Member of Parliament. Lond., 1753. 8vo.

1754. Bartlett, J., Surgeon. The Gentlemen's Farriery, or a Practical Treatise on the Diseases of Horses; wherein the best writers on that subject have been consulted, and M. La Fosse's Method of trepanning glandered horses is particularly considered and improved: also a new invented method of nicking horses is recommended. Lond., 1754. 8vo. 7th edit., 1770.

[1770 edit. in V. M. A.]

1754. Bourgelat, Claude. A new system of Horsemanship [translated] from the French . . . by R. Berenger. Lond., 1754. 4to. B. M.

1754. Lafosse, le Sieur de. Observations et découvertes faits sur les Chevaux. 1754. 8vo. B. A.

1754. Flemying, or Fleming, Malcolm, M.D., of Brigg. A Proposal, in order to demonstrate the Progress of the Distemper among Horned Cattle; supported by Facts. York, 1754. 8vo.

1754. Hastfer, Frederich. Ausfürlicher Unterricht von der Zucht und Wartung der besten Art von Schafen; aus dem Schwedischen. 1754. 8vo.

1755. Fosse, Sieur de la. Observations and Discoveries made upon Horses; with a new method of shoeing. With plates. Lond., 1755. 8vo. W. B. B.

1755. Girson, W. His short Practical Method of Cure for Horses, extracted from his new Treatise on their diseases; with notes of reference to the original; to which is added an Appendix on the right method of Fireing, Shoeing, &c. Lond., 1755. 8vo. V. M. A.

1756. Osmer, William. A Treatise on Horses, wherein it is demonstrated that innate qualities do not exist, and that the excellence of this animal is mechanical and not in the blood. Lond., 1756. 8vo. B. M.

1756. **Saunier.** L'Art de la Cavalerie, ou la Manière de dresser les Chevaux à tous les usages . . . . avec une idée générale de leurs maladies etc., avec figures. Amsterdam. 1756, fol. B. A.

1756. **Lafosse, E. G.** Nouvelle pratique de ferrer les Chevaux. Paris, 1756. 8vo. B. M.

[Pp. 83-186 of a Collection. One plate representing different sorts of Horse-shoes.]

1756. **Bartlet, John.** The Gentleman's Farriery. Lond., 1756. 8vo.

1757. **Wood, John,** Groom to the King of Sardinia, afterwards to the Earl of Rochford. Compendious Treatise on Farriery, wherein are set forth in a plain familiar manner the disorders incident to Horses, and their respective cures. Lond., 1757. 8vo. V. M. A.

1757. **Reeves, John,** Farrier at Ringwood, Hants. The Art of Farriery, both in Theory and Practice; containing the Causes, Symptoms, and Cure of all Diseases incidental to Horses, &c.; revised and corrected by an eminent surgeon. Lond., 1757. 8vo. W. B. B.

1757. **Layard, Daniel Peter,** M.D., Member of Royal College of Physicians, London, and of the Royal Society. An Essay on the Nature, Causes, and Cure of the Contagious Distemper among the Horned Cattle of these Kingdoms. Lond., 1757. 8vo.

1758. **Bartlett, J.** Treatise on the Diseases of Horses. Lond., 1758. 8vo. New edition, 1764. W. B. B.

1759. **Ellis, William.** Every Man his own Farrier; or, The best Methods of Preventing and Curing the Injuries and Diseases of that truly valuable creature, a Horse; laid down in a different manner from what has hitherto appeared on this subject; chiefly from cases and facts, and performed by the cheapest ingredients. Lond., 1759. 8vo. V. M. A.

1759. **Wallace, Thomas,** surgeon. The Farrier's and Horseman's complete Dictionary, containing the art of Farriery in all its branches. Lond., 1759. 8vo. W. B. B.

1759. **Osmer, William.** A Treatise on the Diseases and Lameness of Horses. . . . to which are added . . . Observations on the Art of Farriery, and on the nature and difference of Horses, &c. Lond., 1759. 8vo. 2nd edit., 1761. 3rd, 1766. 5th, 1830.

[1761 edit. in B. M. The others in V. M. A.]

1759. **Bridge, Jeremiah.** Farrier's Guide. 2nd edit. 1759. V. M. A.

1760. A Philosophical Enquiry into the Origin of the Distemper among Horses, with the method of Cure; and also into Epidemics in general. By a Physician. Lond., 8vo. 1760. W. B. B.

1760. **Leathes, D.** A Treatise on the Present Alarming Contagion amongst Dogs; wherein the Origin, Nature, and Effects of the Madness in these Animals, with the more deplorable Symptoms thereby communicated to the Human Body by means of their Bite, are largely considered, and the various Methods of Cure amply illustrated; the most approved Remedies recited which have been employed by the Ancients as well as the Moderns; their Manner of Operation explained; the most efficacious Method laid down of preventing the rise and encrease of this Calamitous Evil; exemplified with several curious Cases. In which is introduced the genuine Composition of an Antimonial Mercurial Powder, which has long engrossed the attention of the Public. Lond., 1760. 8vo.

1761. **Thompson, J.**, of Clifton in Yorkshire. The Compleat Horsedealer, or Farriery made plain and easy. Lond., 1761. 12mo. W. B. B.

1761. **Lafosse.** Dissertation sur la morve des Chevaux. 1761. 12mo. B. A.

1763. **Larcher.** Deux Traités sur les Maladies de Chevaux, 1763. 12mo. B. A.

1764. **Bartlett, J.** Pharmacopœia Hippiatrica, or the Gentleman's Farmer's Repository of elegant and approved Remedies for the Diseases of Horses, in two books. 1. Surgical. 2. Medical part of Practical Farriery. Lond., 1764. 8vo. W. B. B.

1764. **Sind, Baron de.** A description of the Virtues and Uses of the Preservative Electuary against the Glanders in Horses. Lond., 1764. 8vo. W. B. B.

1766. **Lafosse, Etienne Guillaume**, Farrier to the King of France. Guide du Maréchal; une connoisance exacte du Cheval, et la manière de distinguer et de guérir des maladies; ensemble un Traite de la Ferrure. Paris, 1766. 4to. B. M.

1766. **Stubbs, George.** Anatomist and Painter of Animals. The Anatomy of the Horse, including a particular Description of the Bones, Cartilages, Muscles, Fascias, Ligaments, Nerves, Arteries, Veins, and Glands; in 18 Tables; all done from nature. Lond., 1766. Imp. fol. W. B. B.

1767. **Chomel.** Dictionnaire Économique, contenant . . . les soins qu'exigent les bêtes à cornes, à laine, les chevaux, les chiens, les oiseaux, les maladies, leurs remèdes, etc., par C. Nouvelle édition . . . augmentée par de Tamarre. 3 vol., fig. Paris, 1767, fol. B. A.

[The original Edition of Chomel appeared in 1709.]

1769. **Saunier, M. de**, Riding Master at Leyden. Translation of his Guide to the Perfect Knowledge of Horses, wherein everything necessary for the choice, management and preservation of that noble and useful animal is clearly laid down, the result of long experience. Lond., 1769. 8vo. V. M. A.

1769. **Huret.** Dissertation sur le farcin. 1769. 12mo. B.A.

1769. **Le Clerc.** Ancien Médecin des Armées du roi en Allemagne. Essais sur les maladies contagieuses du bétail, avec les moyens de les prevenir et d'y remédier efficacement. Paris, 1769. 12mo. B. A.

1770. **Clark, James**, Farrier to his Majesty for Scotland. Observations on the Shoeing of Horses, together with a new Inquiry into the causes of Diseases in the Feet of Horses, in two parts. Edin., 1770–1775. 8vo. Dublin, 1777. 12mo.

[1775 and '77 edits. in B. M.]

1770. **Clark, J.** Observations upon the Shoeing of Horses, with an Anatomical Description of the Bones in the Foot of a Horse. Edin., 1770–1772. 8vo.

[1770 edit. in B. M.]

1770. **Monetry, Solomon de**, City Physician at Rotterdam. Translation from ths Low Dutch of his Remarks upon the Mortality of the Horned Cattle: containing Directions for extirpating the Infection, or at least obstructing it's progress. Lond., 1770. 8vo.

1772. **Lafosse, E. G.** Cours d'Hippiatrique, ou Traité Complet de la Médécine des Chevaux. Orné de 67 Planches en taille-douce. 1772, fol. B. M., V. M. A.

[The B. M. copy has a double set of plates, of which one is coloured.]

1772. **Comber, Thomas, LL.D.**, Rector of Buckworth and Morborne in Huntingdonshire. Real Improvement in Agriculture, on the Principles of A. Young, Esq. To which is added, A Letter to Dr. Hunter, of York, on the Rickets in Sheep. Lond., 1772. 8vo.

1772. **Bonnetrie, Laboureux de la**, Avocat au Parliament, etc. Traduction d'Anciens Ouvrages Latins, relatifs à l'Agriculture et à la Médecine Vétérinaire, avec des Notes. Paris, 1772–75. 6 vols. 8vo.

1772. **Buchoz, Pierre Joseph.** Médecin du feu Roi de la Pologne. Dictionnaire Vétérinaire, et des Animaux Domestiques, contenant leurs Mœurs, leurs Caractères, leurs Descriptions anatomiques, la Manière de les Nourir, de les Élever, et de les Gouverner, les Alimens qui leur sont propres, les Maladies aux quelles ils sont sujets, et leurs Propriétés, tant pour la Médecine et la Nourriture de l'Homme que pour tous les différens usages de la Vie civile, Auquel on a joint une Tauna (?) Gallica. Paris, 1772. 2 vols. 8vo., with plates. W. B. B.

[Copied exact from Watt.]

1772. Dictionnaire universel et raisonné de médecine de campagne . . . . avec le traitment des maladies des bestiaux, par une Société de Médecins. 6 vols. 1772. 8vo.

1772. Dictionnaire raisonné de médecine, chirurgie et art vétérinaire, contenant . . . . le traitement des maladies des bestiaux. 6 vols. Paris, 1772. 8vo. B. A.

1774. **Vicq d'Arvis.** Observations sur les Moyens que l'on peut employer pour preserver les Animaux sains de la contagion et pour en arrêter le progrès. Bordeaux, 1774. 12mo. B. A.

1774. **Paulet.** Recherches historiques et physiques sur les maladies épizootiques, avec les moyens d'y remédier dans tours les cas. 2 vols. Paris, 1775. 8vo. B. A.

1774. **Erxleben, John Christian Polycarp**, an eminent naturalist born at Quedlinburgh. Practical Observations on the Veterinary Art. 1774.

1775. **Blunt, John**, Surgeon. Practical Farriery. Lond., 1775. 12mo. V. M. A.

1775. Dictionnaire raisonné d'hippiatrique, cavalerie, manège, et maréchallerie. 4 vols. 1775. 8vo. B. A.

1775. **Lafosse.** Dictionaire d'hippiatrique. 4 vols. Paris, 1775. 4to. B. A.

1775. **Buc'hoz, Pierre Joseph.** Dictionnaire Vétérinaire et des Animaux Domestiques. 6 vols. Paris, 1775. 8vo. B. A.

1775. **Hurel.** Traité du farcin Maladie des chevaux, et des moyens de le guérir. 1775. 8vo. B. A.

1775. **Clark**, J. Farrier. Observations upon the growing of Horses. Together with A new Inquiry into the causes of Diseases in the Feet of Horses. In two parts. Edinburgh, 1774. 8vo. P. O.

1776. **Bourgelat**, C. Matière Médicale Raissonée a l'Usage de l'École Vétérinnaire. Lyons, 1776. 8vo. W. B. B.

1776. **Bourgelat**, C. Cours Théorique et Pratique des bandages. Traité de la Ferrure, 1776. 12mo. W. B. B.

1776. **Bourgelat**, C. L'Anatomie comparée de tous les animaux. Mémoires sur les Maladies contagieuses du betail. 1776. 4to. W. B. B.

1776. **Baer, de.** Recherches sur les maladies épizootiques, sur la manière de les traiter, et d'en preserver les bestiaux, tirées des Mémoires de l'Académie Royal des Sciences de Stockholm, et traduites du suédois en français, par M. de Baer. 1776. 8vo. B. A.

1776. **Grignon.** Observations sur les épizootiques contagieuses. 1776, 8vo. B. A.

1776. **Fournier.** Observations sur la nature, les causes, et la maladie épidémique des chiens. 1776. B.A.

1776. **Fantini, Antonio.** Memorià epistolare sopra un' epizoota bovina scopertasi in alcuni luoghi della Dalmazia. Modena. 1776. 8vo.

1776. **Melfort, Drummond de.** Traité sur la cavallerie, contenant le traité des haras, de l'équitation, de la ferrure, la manière de dresser les chevaux et les hommes. 1 vol. de texte, et 1 vol. de pl. Paris, 1776. B. A.

1776. **Lafosse, E. G.** Dictionnaire raisonné d'Hippiatrique, Cavalerie, Manège et Maréchalerie. 2 tom. Paris, 1776. 8vo. B. M.

[Each vol. has two plates with a separate title page and pagination.]

1776. **Ward.** Treatise on Horses. Edin., 1776. 8vo. V. M. A.

1777. Règlement pour les écoles vétérinnaires de France, contenant la police et la discipline générale et particulier, et la police des études. Paris, Imprim. Roy. 1777. 8vo. B. A.

1777. **Robinet.** Dictionnaire d'hippiatrique. Bruxelles, 1777. B. A.

1778. **Garsemet, F. A. de.** Nouveau Parfait Maréchal, ou la connoisance générale et universelle du cheval, divisé en sept traités. Avec une dictionnaire des termes de cavalerie. Le tout enrichi de 50 figures en taille-douce. 4th edit. 1778. 4to. Sixième Édition. Paris, Niort (printed) 1843, 4to.

[The author died in 1778, so that these editions were all posthumous. 1843 edit. in B. M.]

1778. Traité Économique et physique de gros et du menu bétail: contenant la description du cheval, de l'âne, du mulet, du bœuf, de la chèvre, de la brebis, et du cochon; la manière . . . . . de les traitér dans leurs maladies . . . . &c. 2 vol. 12mo. 1771. B. A.

1778. **Dodswell, Dr.** Observations on Hydatides in the Heads of Cattle and Sheep. Lond., 1778. 8vo.

1778. Claircules du cheval ou Tableau des connaissances relatives à cet animal. 2nd edit. 1778. B.A.

1778. **Dawson, Ambrose, M.D.** Observations on Hydatides in the Heads of Cattle. Lond., 1778. 8vo.

1778. **Quier, John.** Practitioner of Physic in Jamaica. Letters and Essays on the Diseases of the West Indies, to which are added, Thoughts on the Hydrocephalus internus, and Observations on Hydatides in the Heads of Cattle. Lond., 1778. 8vo.

1778. **Reeve.** Farriery. 4th edit. 1778. 8vo. V. M. A.

1780. **Swaine, John.** Every Farmer his own Cattle Doctor; a Treatise on the Diseases of Cattle. Lond., 1776. 12mo. 1780. 8vo.

1782. **Tessier.** Observations sur plusieurs maladies des bestiaux, avec le plan d'une étable, etc. 1782. 8vo. B. A.

1782. **Chabert, Flandrin, et Huzard.** Almanach vétérinaire, contenant l'histoire abrégée des progrès de la médecine vétérinaire des animaux, depuis l'établissement des écoles vétérinaires en France: on y a joint la description et le traitement de plusieurs maladies des Bestiaux, la notice de quelques ouvrages sur l'art vétérinaire. Paris. 1782–1790.

1783. **Clater, Francis,** Chemist and Druggist, Retford. Every man his own Farrier, or the whole Art of Farriery laid open. . . . To which is added an Appendix. Newark 1783–1787. 8vo. 21st edit. enlarged. Lond., 1810. 8vo. 30th edit. edited . . and . . corrected by E. Mayhew. Lond., 1852. 8vo. 31st edit. 1861. 12mo.

1784. **Griffiths, William.** A Practical Treatise on Farriery. Wrexham. 1784. 1787. 4to.

[1784 edit. in B. M.]

1784.? **Foucroy, Anthony Francis,** an eminent French Chemist (1755–1809). Principes de Chimie, à l'usage de l'École Vétérinaire. 2 vols. 12mo. [?] 1784.

1785. **Hamilton, Robert,** M.D., Physician and Surgeon of Lynn, Norfolk. Remarks on the means of obviating the fatal effects of the Bite of a Mad Dog, or other Rabid Animals; with Observations on the method of cure when Hydrophobia occurs, and the opinions relative to the Worming of Dogs refuted. Illustrated by examples. Ipswich, 1785. 8vo. An enlarged edition. Lond., 1798. 2 vols. 8vo.

1785. TRUTTA, GIOV. BALT. Novello giardino della pratica el esperienze sopra il governo ed ammaestramento del cavallo, e del buove, della qualità, uso ed infermità dei medesimi. Napoli, 1785. 4to.

1787. TOPHAM, THOMAS. A New Compendious System on several Diseases incident to Cattle, with the Remedies. York, 1787. 4to. 1801. 8vo.

1788. CLARK, J. A Treatise on the prevention of Diseases incidental to Horses, from bad management, in regard to stables, food, water, air, and exercise, with some Surgical and Medical branches of Farriery. Edin., 1788. 8vo. 2nd edit. Edin., 1790. 4th edit. Lond., 1805. 8vo.

[1788 and 90 edits. in B. M.]

1788. CLARK, J. First Lines of Veterinary Physiology, and Pathology. Vol. 1. Edin., 1788. 8vo. 1806. 8vo.

[1806 edit. in B. M.]

1788. TAPLIN, WILLIAM, Surgeon. The Gentleman's Stable Directory, or modern system of Farriery, comprehending the present entire improved mode of Practice, and containing all the most valuable prescriptions and approved remedies. Lond., 1788. 8vo. Vol. ii. containing experimental remarks upon Breeding, Breaking, Shoeing, Stabling, Exercise, and Roweling; to which are added, particular instructions for the general management of Hunters and Road Horses, with concluding observations on the present state of the Turf. Lond., 1793. 8vo. The same, entitled, A Compendium of Practical and Explanatory Farriery, equally adapted to the convenience of the Gentleman, the Farrier, the Groom, and the Smith. Lond., 1796. 2 vols. 8vo.

[The copy in B. M. is dated 1793, vol. 1 is called the twelfth, and vol. 2 the third edition.]

1788. FORRESTER, WILLIAM, Farrier. The gentleman's experienced Farrier; containing the methods of Diet, Exercise, Bleeding, Purging, &c. of Horses; the Anatomical parts described; and their various cures. Lond., 1788. 8vo. W. B. B.

1788. TOPHAM. Diseases of Cattle. 1788. V. M. A.

1789. BONIOL, D'AGEN, Médecin, Bourdeaux. Dissertation sur la maladie épizootique des animaux, et sur les moyens propres à les conserver. 1769. B. A.

1790. **Kausch, Von, Dr.** en Médecine. Observations originales sur les deux espèces d'épizootics parmi les bêtes . . . avec l'exposé d'une méthode curative très-peu dispendieuse. Trad. de l'allem. . . . Gottingue, 1790. 8vo. B. A.

1790. **Prosser, Thomas.** A Treatise on the Strangles and Fevers of Horses; with a Plate representing a Horse in the Staggers clung. Lond., 1790. 8vo. B. M., V. M. A.

1790. **Ford, Richard,** Farrier, of Birmingham. A Treatise on the Inoculation of Horses for the Strangles; in which is clearly laid down the manner and time of the operation, the Preparation necessary, and the mode of Treatment during the continuance of the Disorder. The whole being the result of long experience. Birm., 1790. 12mo. Another edition, 1791. 8vo. B. M.

1791. **St. Bel or Sainbel, Charles Vial de,** Professor of Veterinary Medicine, London. Of the Perfections of Eclipse. French and English. Lond., 1791. 4to. V. M. A.

1791. **Snape, Edward.** Practical Farriery, &c. Lond., 1791. 4to. V. M. A.

1793. **St. Bel, C. V.** Lectures on the Elements of Farriery, or the art of Horse-shoeing and on the Diseases of the Foot; designed chiefly for the use of the Pupils of the Veterinary College, London. Lond., 1793. 4to. Each copy accompanied with a box of hoofs and shoes. V. M. A.

1794. **Huzard, Jean-Baptiste.** Essai sur les maladies qui affectent les vaches laitières des environs de Paris. 1794. 8vo. B. A.

1795. **St. Bel, C. V.** Works; to which is added, a short Account of his Life. Lond., 1795. 4to., with Plates. W. B. B.

1795. **Osbaldiston, William Augustus, Esq.** The British Sportsman, or Noblemen, Gentlemen, and Farmers' Dictionary of Recreation and Amusement; including a most improved System of Modern Farriery and Anatomical Directions of a Horse. Lond., 1795. 4to. W. B. B.

1795. **Gilbert,** Membre du Corps-Legislatif. Recherches sur les causes des maladies charboneuses dans les animaux. 1795. 8vo. B. A.

1795. **Aubert.** Rapport sur les moyens à prendre pour améliorer les troupeaux et perfectionner les laines dans le département de la Seine-Inférieure et dans la France, avec des pièces et des notes relatives. Rouen, 1795. 4to B.A.

1795. **Davidson, William,** Apothecary. Observations, Anatomical, Physiological, and Pathological on the Pulmonary System; with remarks on some of the diseases of the Lungs, viz., on hœmorrhage, wounds, asthma, catarrh, croup, and consumption, tending to establish a new Pathology of the Lungs, founded on the anatomy and physiology of those parts; also some remarks on the the Broken Wind of Horses. Lond., 1765. W. B. B.

1795. **Litang.** Farriery. 1795. V. M. A.

1796. **Hunter, James.** Veterinary Surgeon. A complete Dictionary of Farriery and Horsemanship; containing the Art of Farriery in all its branches, with an explanation of the Terms, and a Description of the various particulars relating to the manage and to the knowledge of Horses. Lond., 1796. 8vo. W. B. B.

1796. **Lawrence, John.** Philosophical and Practical Treatise on Horses; and on the Moral Duties of man towards the Brute Creation. Lond., 1796. 8vo. 1798. 2 vols. 8vo. 3d edit. 1809. W. B. B.

1796. **Lawrence, John.** The Sportsman, Farrier and Shoeing Smith's New Guide, being the substance of the Works of the late C. de St. Bel. 1796. 8vo. W. B. B.

1796. **Freeman, Strickland,** Esq. Observations on the Mechanism of the Horse's Foot; its natural spring explained, and a mode of shoeing recommended by which the foot is defended from external injury with the least impediment to its spring. With plates. Lond., 1796. 4to. B. M., V. M. A.

1796. **Taplin, William,** Surgeon. Compendium of Practical and Experimental Farriery. Brentford, 1796. 8vo. B. M.

1796. The Anatomy of the Horse, accompanied with Remarks, &c. Blaine. ? 1796. ?

[Was this published anonymously ?].

1796. **Hunter, J.** Veterinary Dictionary. 1796. V. M. A.

1796. **Taplin.** Farriery. 12th edit., 1796. V. M. A.

1797. **Huzard.** Instructions sur les soins à donner aux chevaux pour les conserver en santé. 1797. 8vo. B. A.

1797. **St. Bel.** The Veterinary Art. 3rd edit. 1797.

1797. **Downing, Joseph.** Treatise on the disorders incident to Horned Cattle. To which are added, Receipts for curing the Gripes, Staggers, and Worms in Horses, and an Appendix containing instruction for the extraction of Calves. Lond., 1797. 8vo.

1797. **Champney, T., Esq.** Member of the Incorporation of Surgeons. London Medical and Chirurgical Reform proposed, from a Review of the Healing Art throughout Europe, particularly Great Britain; with considerations on Hospitals, Dispensaries, Poor Houses, and Prisons. Observations on the Apothecaries' Application to Parliament, and proposals for legislative measures. Including hints for improving the Healing and Veterinary Arts. Lond., 1797. 8vo.

1798. **Coleman, Edward,** Surgeon. Professor of the Veterinary College. Observations on the Structure, Economy, and Diseases of the Foot of the Horse, and on the Principles and Practice of Shoeing. 8 plates. Vol. 1st. Lond., 1798. 4to. Vol. 2nd., 1802. 4to. With 15 plates.

1798. **Buc'hoz.** Dissertation sur le Dictionnaire vétérinaire des animaux domestiques, par B. 1798. B. A.

1798. **Enguehard.** Médecin des Prisons de Paris. Epizootic ou Maladie des Bestiaux, etc. 1798. 8vo. B. H.

1798. **Tennecker, E. E. S. von.** Zur Kenntniss von Pferden, vorzüglich die Krankheiten und Curaten betreffend. Neue Aufl. 2 vols. Freyberg, 1798. 16mo.

1799. **Blaine, Delabere Pritchett.** Professor of Animal Medicine. Anatomy of the Horse, accompanied with Remarks, Physiological, Pathological, Chirurgical, and Natural. Illustrated with Tables. Lond., 1799, fol. B. M.

[No date to B. M. copy. Date as above given by Watt.]

1799. Remèdes preservatifs et curatifs pour les maladies du bétail. Genéve, An VII. (1799). 12mo. B. A.

1800. BLAINE, D. P. Canine Pathology, or a Common Description of the Distemper in Dogs, with an account of an efficacious Remedy for it. Lond., 1800. 8vo. 1817. 8vo.

[1817 edit. in B. M. Title rather different to above, which is given in W. B. B. This edit. is not called the *second*.]

1800. LANE, JOHN, A. V. P., late of the 2d Regiment of Life Guards. The Principles of English Farriery vindicated; containing strictures on the erroneous and long-exploded system lately revived at the Veterinary College; interspersed with cursory remarks on the systems of Solysell, De Saunier, De la Fosse, &c.; in which is fully displayed the superiority of English Farriery over that of foreign nations. Lond., 1800. 8vo. W. B. B.

1800. BURNIVA, DR. Observations et expériences sur la maladie epizootique des chats, qui règne depuis quelques années en France, en Allemagne, en Italie et en Angleterre. Paris, an VIII. (1800). 8vo. B. A.

1800. CHABERT, P. FLANDRIN, R., and HUZARD, J. B. Maladies des animaux domestiques. 3e et 4e éd. 6 vols. Paris, 1800–13. 8vo.

1800.? AUBERT, A. Discours sur la maladie des bestiaux. B. A.

1800. BEAUMONT Ainé. Avis sur la maladie épizootique qui se manifeste dans les chevaux, et sur les moyens à prendre pour la prévenir et la combattre avec succès. Augsbourg, 1800. 8vo. B. A.

1800. COLEMAN, EDW. Observations on the Formation and uses of the Natural Frog of the Horse, with a Description of a Patent Artificial Frog, to prevent and cure Contracted Hoof, Thrushes, Cankers and Sandcracks. Lond., 1800. 8vo.

1801. RYDING, WILLIAM. Veterinary Pathology: or a Treatise on the cause and Prevention of the Diseases of the Horse . . . and an Appendix, or Veterinary Dispensary, etc. York, 1801. 8vo. B. M.

1801. RYDING, WILLIAM. Pathologie vétérinaire, ou le *Vade Mecum* du cavalier; ouvrage utile à tout propriétaire de Chevaux; traduit de l'Anglais de M. William Ryding. 1801. 12mo. B. A.

1801. A Manual for the use of Coachmen, Grooms, Ostlers, and all Persons concerned in the care and management of of Horses; being a selection of near three hundred Receipts for the several Disorders to which that noble Animal is subject. Lond., 1801. 12mo.

1801. The First number of Veterinary Transactions, containing observations on the Effects and Treatment of Wounds of Joints and other circumscribed cavities. London, 8vo. 1801.

1801. Lawrence, Richard, Veterinary Surgeon, Birmingham. An Inquiry into the Structure and Animal Economy of the Horse, comprehending the diseases to which his limbs and feet are subject; with proper directions for Shoeing; and pointing out a method of ascertaining his age until his twelfth year, &c. Illustrated with 18 copperplates. Lond., 1801, 1804. 4to.

1801. White, James, Veterinary Surgeon, First or Royal Dragoons. The Anatomy and Physiology of the Horse's Foot concisely described, with practical observations on Shoeing. 14 Plates. Lond., 1801. 18mo.

1801. Catalogue général de Livres sur l'Agriculture, la Jardinage, l'Économie rurale, et l'Art Vétérinaire, &c. Paris, 1801. 8vo. B. A.

[Said to be merely a list of books published by one particular Paris publisher. Also said to be inaccurate.]

1801. Pulley. Animal Impregnation. 1801. V. M. A.

1801. Lawrence, Richard. Inquiry into the Structure and Economy of Horses. 1801. V. M. A.

1802. Fromage. Moyens de faire cesser la mortalité des Chevaux dans une ferme du département de Seine et Marne. Paris, 1802. 4to. B.A.

1802. Blaine, D. P. The outlines of Veterinary Art, or the principles of Medicine, as applied to a knowledge of the Structure, Functions, and Economy of the Horse, the Ox, the Sheep, and the Dog, and to a more scientific and successful manner of treating their various diseases. Illustrated with plates. Lond., 1802. 2 vols. New edition, 1816. 8vo. Fifth edition, 1841. 8vo. Sixth edition, revised and improved by E. Mayhew, 1854. 8vo.

[Edits. of 1816, '41, '54 in B. M.]

1802. La Connaissance parfaite des Chevaux, avec la Manière de les Gouverner et les conserver en santé, &c. 1 gros vol., avec des figures. 1802. 8vo. B. A.

1802. GODINE, jeune, Professeur à l'École d'Économie rurale Vétérinaire d'Alfort, Membre de la Société galvanique. Expériences sur la Vaccine dans les Bêtes-à-laine comme moyen preservatif du Cheveau, pendant les années X. et XI. Paris, an XI. (1802). 8vo. B. A.

1802. BOARDMAN, THOMAS, Veterinary Surgeon, 3rd Dragoons. A Dictionary of the Veterinary Art. Lond. 4to. 1802–3.

[Thus dated in W. B. B., a copy in P. O. is dated 1805. See below.]

1802. WHITE, JAMES. A Compendium of the Veterinary Art; containing an accurate description of all the Diseases to which the Horse is liable, their Symptoms and Treatment. Lond., 1802. 2 vols. 12mo.

[2nd and 12th edits. in V. M. A.]

1802. GRELLIER. Elements of the Veterinary Science. 1802. V. M. A.

1802. DENNY. Diseases of Horses. 1802. V. M. A.

1802. COLEMAN, E. Respiration. 2nd edit., 1802. V. M. A.

1803. BLAINE, D. P. A Domestic Treatise on the Diseases of Horses and Dogs. Lond., 1803. 12mo. 1810, 12mo. W. B. B.

1803. FERON, JOHN, Veterinary Surgeon, 12th Light Dragoons. A new system of Farriery; including a systematic arrangement of the Internal Structure of the Horse. Illustrated with copperplates representing the exact proportions of a blood horse, and a description of all the defects which tend to impede velocity. Rules for Diseases of the Horse, &c. Lond., 1803. 4to. Lond., 1808–9. 8vo. V. M. A.

[1803 edit. in B. M.]

1804. FOSSE, SIEUR, LA. Veterinarian's Pocket Manual; a Treatise on the Diseases of Horses, particularly the glanders. Translated from the French. 1804. W. B. B.

1804. HARRISON, EDWARD, M.D., F.R.S., F.A.S., Edin. An Inquiry into the Rot in Sheep and other Animals; in which a connection is pointed out between it and some obscure and obstinate Disorders in the Human Constitution. Lond., 1804. 8vo.

1804. WHITE, JAMES. System of Veterinary Medicine; containing the Materia Medica and Pharmacopœia. Lond., 1804. 2 vols. 12mo.

1804. CHABERT, P., et FROMAGE, C. M., des Moyens de rendre l'Art Vétérinaire plus utile. Memoire présenté au Gouvernement, par P. C. et C. M. F. Paris, an XIII. (1804). 8vo. B. A.

1804. D'AUDEBERT, CHAVASSIER. Des Exanthèmes, Épizootics, et particulièrement de la Clavelée et de la Vaccine, rapprochées de la petite verole, etc. Paris, 1804. 8vo. B. A.

1804. ROWLIN, Cow Doctor. 8th edit., 1804. V. M. A.

1805. LAURENCE, JOHN. A general Treatise on Cattle: the Ox, the Sheep, and the Swine; comprehending their breeding, management, improvement, and diseases. Lond., 1805. 8vo. W. B. B.

1805. BOARDMAN, THOMAS, Veterinary Surgeon to 3rd Dragoons. Dictionary of the Veterinary Art; containing all the modern improvements. Illustrated with Copperplates. Lond., 1805. 4to. P.O.

1805. CHABERT, P., et FROMAGE, C. M. F. Traité théorique et pratique sur l'engraissement des Animaux domestiques; ou sont décrits les qualités physiques qui disposent les bœufs, les moutons, les cochons, et les volailles a engraisser, les vices de conformation, ou les Maladies qui les empêchent. . . . Les Moyens préservatifs et les Remèdes curatifs des Maladies qui surviennent pendant et après leur engraissement. Paris, 1805. 8vo. B. A.

1806. BURKE, B. W. A Compendium of the Anatomy, Physiology, and Pathology of the Horse. 1806. 12mo.

1806. STRIPP. Farriery. 1806. V. M. A.

1807. GOTRIER, J. B., Professeur a l'École Impériale de Lyon. Observations et expériences faites à l'École Impériale vétérinaire de Lyon, sur le pain moisi et sur quelques poisons minéraux et végétaux; suivies du précis de plusieurs essais sur la vaccination des bêtes à laine. Lyon, 1807. 8vo. B. A.

1807. Duncan, Andrew, jun., M.D. Tentamen inaugurale de Swieternia Soymida. Treatise on the Diseases which are incident to Sheep in Scotland; drawn up from original commentaries presented to the Highland Society. Edin., 1807. 8vo.

1807. Hogg, James, the Ettrick Shepherd. The Shepherd's Guide; being a practical Treatise on the Diseases of Sheep, their causes, and the best means of preventing them; with observations on the most suitable Farm-stocking in the various climates of this country. Edin., 1807. 8vo. V. M. A.

1809. Clark, Bracy, F.L.S., Veterinary Surgeon. A series of Original Experiments on the Foot of the living Horse, exhibiting the changes produced by shoeing, and the causes of the apparent mystery of this Art. Part i. Lond., 1809. 4to. Part ii. 1812. B. M., V. M. A.

1809. Mackenzie, Sir George Stewart, Bart., F.R.SS. L. and E. A Treatise on the Diseases and Management of Sheep, with introductory remarks on their anatomical Structure, and an Appendix, containing Documents exhibiting the value of the Merino Breed of Sheep, and their progress in Scotland. Lond., 1809. 8vo.

1809. Cochrane, Hon. Basil. An Improvement in the Mode of administering the Vapour Bath, and in the Apparatus connected with it. With Plans and Estimates of fixed and portable Baths, for Hospitals and Private Houses, and some Practical Suggestions on the Efficacy of Vapour in Application to various Diseases in the Human Frame, and as it may be beneficial to the Veterinary Art of Medicine. Plates. Lond., 1809. 4to.

1809. Wilson, Yorick, Veterinary Surgeon, Lemington. The Gentleman's Veterinary Monitor and Stable Guide; a concise Treatise on the various Diseases of Horses. Lond., 1809. 18mo. V. M. A.

1809. Lawrence, Richard. Observations on the Causes which constitute unsoundness in Horses, considered in regard to the Sale and Purchase of those Animals. Lond., 1809. 8vo.

1809. Lawrence, Richard. On Unsoundness in Horses. 1809. V. M. A.

1810. Laurence, John. History and Delineation of the Horse in all its varieties. With 15 engravings by Scott. Lond., 1810. 4to. W. B. B.

1810. Clater, F. Every Man his own Cattle Doctor; being a concise and familiar Description of all the Diseases incident to Oxen, Cows and Sheep, with the most Simple and Efficient Methods of Cure. Lond., 1810. 8vo. 6th edit., 1825. 8vo. 7th, 1832. 8vo. 8th, 1836. 12mo. 11th, with additions by E. Mayhew, 1853. 8vo. 12th, 1859. 12mo. Entirely re-written to the present date by G. Armatage, M. R. C. V. S. With . . . notes . . . and . . . illustrations, etc. 1870. 8vo.

[Editions of 1825, '32, '53, '59, '70 in B. M.]

1810. Dalton, E. Natural History and Anatomy of the Horse. In German. Weimar. 1810–16. 2 vols., fol. Illustrated by 48 engravings. W. B. B.

[This book is not mentioned in Heinsius' Bücher-lexikon nor in Englemann's Bibliotheca Historiea-naturalis.]

1810. Bibliographie Agronomique; ou Dictionnaire Raisonné des ouvrages sur l'Économie Rurale et Domestique, et sur l'Art Vétérinaire, &c. Paris, 1810. 8vo. B. M.

[The titles of the works apparently bearing on the present subject have been extracted and inscribed in this list.]

1810. Collaine. Compte rendu d'une Expérience tentée et des succès obtenus contre la morve et le farcin, etc. Paris, 1810. 8vo.

1810. Blaine, D. P. Diseases of the Horse and Dog. 4th edit., 1810. V. M. A.

1811. Pearson, Robert. Every Man his own Horse, Cattle, and Sheep Doctor. Leic., 1811. 8vo.

1812. Skellet, E. A Practical Treatise on the Parturition of the Cow, on the extraction of the Calf, and on the Diseases of neat Cattle in general. Lond., 1812. 8vo. 1829.

[1829 edit. in V. M. A.]

1812. Rowland, Thomas. A Treatise on the Diseases of Horned Cattle. Bangor, 1812. 8vo.

1812. Wyke, J. The English and Welsh Cattle Doctor, 1812. 8vo.

1812. Parkinson. Parturient Animals. 1812. V. M. A.

1813. **Clark, Bracy.** A section of the Horse. Lond. 1807, fol. 8vo. Index to the sectional figures of the horse, with remarks on certain proportions of his general framing. Lond., 1813. 4to. B. M., V. M. A.

1813. **Vaughan, Walter, M.D.,** Physician at Rochester. Some Account of an Appearance in the Flesh of a Sheep. 1813. 8vo.

1814. **Clark, Bracy.** On Casting Horses. With a description of the new casting Hobbles, invented by B. C. London, 1814. Fol. B. M.

1814. **Powis, R.,** Veterinary Surgeon. An examination of the different systems of Shoeing Horses. 1814. 8vo.

1814. **Peck, William,** Farrier. Veterinary Medicine and Therapeutics, containing the Effects of Medicines in various Animals. Lond., 1814. 8vo.

1814. **Tindall, John.** Yorkshire Farriery. Lond., 1814. 8vo.

1814. **Peall, Thomas.** Diseases and Stable management of the Horse. Lond., 1814. 4to.

1815. **Clark, Bracy.** An Essay on the Bots of Horses and other Animals. Lond., 1815. Fol. Appendix to the same. Lond., 1841. Fol. B. M.

[A paper was written by the author in 1798 on this subject, and printed in the Linn. Trans., 1796. Vol. iii., p. 289.]

1815. **Peall, Thomas,** Veterinary Professor, Lecturer to the Right Hon. the Dublin Society, and Veterinary Surgeon in the Royal Artillery. Observations, chiefly practical, on some of the more common Diseases of the Horse, together with Remarks upon the general Articles of Diet, and the ordinary Stable Management of that Animal. Lond., 1815. 4to.

1815. **White, James.** Treatise on Veterinary Medicine. Lond. 4 vols. 12mo.

1816. A Treatise on Greyhounds, with observations on the Treatment and Disorders of them. Lond., 1816. 8vo. B. M.

1816. **Budd, Richard Hayward,** Veterinary Surgeon. A Practical Treatise on the Diseases of the Foot of the Horse, with observations on Shoeing. 1816. 8vo.

1816. **Lawrence, Richard.** Farriery. 1816. V. M. A.

1816. **Budd.** Diseases of the Foot of the Horse. 1816. V. M. A.

1817. **Clark, Bracy.** Recherches sur la construction du Sabot du Cheval, et suite d'expériences sur les effets de la fermer. Ouvrage traduit de l'Anglais, etc. Paris, 1817. 8vo. B. M.

1817. **Clark, Bracy.** Stereoplea. Or, The Artificial Defence of the Horse's Foot considered. Lond., 1817, fol. 1818. 4to. 1832.

[1818 edit. in B. M. 1832 edit. in V. M. A.]

1818. **Smith, T.** Glanders. 1818. 8vo. V. M. A.

1820. **Clark, Bracy.** A description of a new Horse Shoe which expands to the foot. Invented by B. C. With some account of its application and advantages. Being an Appendix to the Stereoplea. Lond., 1820. 4to. B. M.

1820. **Goodwin, Joseph.** New system of shoeing Horses. Lond., 1820. 8vo. 2nd edit., 1824. V. M. A.

1821. **Clark, Bracy.** An Essay on the Cause and Cure of Running Frush in Horses' Feet. Lond., 1821. 3rd edit. 1842. 4to. B. M.

[Pagination irregular.]

1821. **Schwab, C.** Lehrbuch der Anatomie der Hausthiere. München, 1821. 8vo.

1821. **Teesh.** Shoeing. 1821. V. M. A.

1822. **Clark, Bracy.** An Essay on the Canker and Corns of Horses' Feet. Lond., 1822. Fol.

1823. **Pursglove.** The Practical Farrier. 1823. V. M. A.

1823. Rot in Sheep, by a Lammermuir Farmer. 1823. V. M. A.

1824. **Clark, Bracy.** A Short History of the Horse, and Progress of Horse Knowledge. Lond., 1824, fol.

1824. **Parry.** Tetanus and Rabies. 1824. V. M. A.

1824. **Hodgson.** The Foot of the Horse. 1824. V. M. A.

1825. **Tennecker, C. E. S. von.** Lehrbuch der Pferdekenntnis. Altenburg, 1825. 8vo.

1826. **Clark, Bracy.** On the Knowledge of the Age of the Horse by his Teeth. Lond., 1824, fol.

1827. **Tennecker, C. E. S. von.** Naturlehre des Pferdes. München, 1827. 8vo.

1827. **Lessona, Carlo.** Dell' arte della Ferratura nel Cavallo. 1827. V. M. A.

1828. **Clark, Bracy.** Description of the new Expansion Shoe, with testimonies of its use, and best mode of using it. With numerous figures also of an improved unilateral Shoe. 2nd edition. Lond., 1828. Fol. B. M., V. M. A.

1828. Veterinarian, the, for 1828–32 (Edited by Messrs. Percivall and Youatt), vol. 1–5.

Veterinarian, a monthly journal of veterinary science for 1833–41. Edited by W. Dick, W. F. Karkeck, W., Percivall and W. Youatt, vol. 6–14, New Series.

Veterinarian, vol. 15–20, New Series. Edited by W. Percivall.

Veterinarian, vol. 21–27. Third Series. Edited by Professors Morton and Simonds.

Veterinarian, Vol. 28, &c. Fourth Series. Lond., 1828, &c. 8vo.

[In progress.]

1828. **White, James.** Compendium of Cattle Medicine . . Being a 4th vol. of his . . . . Veterinary Medicine. 5th edit, Lond., 1828. 12mo. By W. C. Spooner, 1842.

[1842 edit. in V. M. A.]

1829. **Clark, Bracy.** Hippodonomia; or, The True Structure, Laws, and Economy of the Horse's Foot. Also, Podophthora; or, A Ruinous Defect in the Principle of the Common Shoe detected. . . With a proposition for a new principle of Shoeing. . . Lond., 1829, fol. B. M., V. M. A.

[This in B. M. is bound up with a number of other essays on the same subject by Clark, and entitled "Clark on the Horse."]

1829. **Mazza, Vincenzo.** Storie d' Alcune Pericolose e difficili Maladie nel Polmone del Cavallo. 1829. V. M. A.

1829. **Girard, M.** Treatise on the Teeth of the Horse [translated] by Gaudy. Lond., 1829. 12mo.

1830?. **Clark, Bracy.** A Description of two ancient Horseshoes found near Silbury Hill in Wiltshire. Lond., n. d., fol. B. M.

1830?. **Clark, Bracy.** Guide to the Shoeing-forge; or, Plain Directions to Gentlemen going to have their Horses shod, of what they should observe in seeing it properly executed. Lond., n. d., fol. B. M., V. M. A.

1830?. Remarks on French Shoeing, by an English Shoeing Smith. Lond., n. d., fol. B. M., V. M. A.

[By Bracy Clark, bound with his essays in B. M.]

1830. WHITE, JAMES. Veterinary Dictionary. Second Edit. Lond., 1830.

1830. VINES, R. Glanders and Farcy. 1830. 8vo. V. M. A.

1830. YOUATT, WILLIAM. Canine Madness. Lond., 1830. V. M. A.

? 1830. MAZZA, VINCENZO. Corso di Chirurgia Veterinaria. 4 vols. V. M. A.

1831. CLARK, BRACY. On the Usages of the Ancients respecting shoeing the Horse. 2nd edition. London, 1831. Fol. B. M.

1831. The Horse,—Its History, Breed, Structure, Diseases, &c., with a Treatise on Draught. 1831.

1831. BLAINE, EPHRAIM. Village Farrier. 2nd edit. Lond., 1837. 12mo. 1841. 12mo. V. M. A.

1831. YOUATT, WILLIAM. The Horse. Lond., 1831. 8vo. 3rd edit., 1859. 8vo. 1851. 8vo. With Cecil's Observations. Lond., 1860. 12mo. With Spooner's Supplement. Lond., 1849. 8vo. V. M. A.

1832. BOURGELAT, CLAUDE. Élémens de l'Art Vétérinaire. Traité de la Conformation extérieure du Cheval. . . . Huitième Édition, publiée avec des notes par J. B. Huzard. Avec figures. Paris, 1832. 8vo. B. M.

1832. TURNER, JAMES. Treatise on the Horse's Foot. Lond., 1832. Roy. 8vo.

1832. The Veterinary Examiner; or Monthy Record of Physiology, Pathology, and Natural History. No. 1–3. Lond., 1832, 1833. 8vo.

[Discontinued.]

1832. RYDGE, JOHN. Veterinary Surgeon's Manual. 4th edit, Lond., 1822. 12mo. V. M. A.

1832. BLAINE, D. P. Canine Pathology. 3rd edit., Lond., 1832. 8vo. 5th edit., 1851. V. M. A.

1832. TURNER, JAMES. The Foot of the Horse. 1832. V. M. A.

1833. Clark, Bracy. Pharmacopœia equinia; or, a new Pharmacopœia for Horses. Lond., 1819. 4to. 3rd edition. 1833. B. M.

1833. Depping and Michel. Le Forgeron Veland. Paris, 1833.

1834. Clark, Bracy. On Crackt-Hoof and its Cure. 2nd edition. Lond., 1834, fol. B. M.

[Originally written for Rees' Cyclopædia, to which the author contributed the articles on Anatomy of the Horse, Bits, Bleeding, Blindness, Blister, Bots, Broken Wind, Canker, Corns, Curb, Collar.]

1834. Clark, Bracy. On Quittor and its Treatment. 2nd edition. Lond., 1834. Fol. B. M.

[This, in the second edition, is printed with paper on Crackt-Hoof, and is paged continuously with it.]

1834. A collection of Papers on the Horse. V. M. A.

1834. Youatt, William. Treatise on Cattle. Lond., 1834. 8vo. 1838. 8vo. 1854. 8vo. V. M. A.

1834. Lessona, Carlo. Patologia del Cavallo. 1834. V. M. A.

1836. Clater Francis. Every man his own Farrier. 27th edit. Lond., 1836. 12mo.

1836. Lessona, Carlo. Ricerche sul Tetano. 1836. V. M. A.

1836. Lessona, Carlo. Non Esistenza del Contagio. 1836. V. M. A.

1837. Clark, Bracy. A Description of the Gripes of Horses, and of a better mode of treating it. 2nd edit. Lond., 1837, fol. B. M.

1837. Clark, Bracy. Recommendations to Farriers and Shoeing Smiths throughout the United Kingdom of Great Britain, in respect to the injurious practice of slicing and cutting away the horn from the frogs of horses' feet. 3rd edit. Lond., 1837, fol. s. sh. B. M.

1837. Morton, W. J. Manual of Veterinary Pharmacy. Lond., 1837. 12mo. 2nd edit., 1837; 3rd, 1843; 4th, 1847; 5th, 1854; 6th, 1859; 7th, 1860. 8vo.

1837. Spooner, W. C. Influenza in Horses. 1837. V. M. A.

1837. Browne, Dr. Veterinary Art. 1837. V. M. A.

1837. Youatt, William. Treatise on Sheep. Lond., 1837. 8vo. 1851. 8vo. V. M. A.

1838. Clark, Bracy. A Treatise on the Bits of Horses (*Chalinologia*). 2nd edit. Lond., 1835, fol. B. M.

1838. **Clark, Bracy.** Hippiatria; or, The Surgery and Medicine of Horses. Lond., 1838, fol. B. M.

1838. **Lessona, Carlo.** Della Rabbia. 1838. V. M. A.

1839. **Clark, B.** Disorders of the Foot of the Horse. Lond., 1839, fol. B. M.

1839. **Clark, Bracy.** On the Vices of Horses. Lond., 1839, fol. B. M.

1840? **Clark, Bracy.** On Founder, n. d., fol. B. M.

1840? **Clark, Bracy.** A Short History of the celebrated Racehorse Eclipse. Lond, n.d., fol. B. M.

1840? **Clark, Bracy.** Descriptions of Plates of Head of the Horse. Lond, n. d., fol., s. sh. B. M.

1840. **Spooner, W. C.** The Foot of the Horse. 1840. V. M. A.

1841. **Blaine, D. P.** Outlines of Veterinary Art. 4th edit. Lond., 1832. 8vo. 5th edit., 1841. V. M. A.

1841. **Dick, William.** Manual of Veterinary Medicine. Lond., 1841. Post 8vo.

1841. **Mayhew, E.** Blaine's Outlines of the Veterinary Art. Lond., 1841. 8vo. 5th edition. Lond., 1854. 8vo. V. M. A.

1841. **Dick, W.** Manual of Veterinary Science. Lond., 1841. Post 8vo. 2nd edit., 1862. 8vo. V. M. A.

1842. **Clark, Bracy.** Original Remarks on the General Framing of the Horse. Illustrated by Plates and a large sectional figure. 2nd edit. Lond., 1842, fol. B. M.

1842. **Clark, Bracy.** Some account of the Circulation of the Blood in the Foot of the Horse. Lond., 1842, fol. B. M.

1842. **Solleysell, James.** Art of Shoeing Horses. With notes by Cherry. Lond., 1842. 8vo. V. M. A.

1843. **Engelmann, W.** Bibliotheca veterinaria. 2te Aufl. Leipzig, 1843. 8vo.

1843. **Field, John.** Extract from his Veterinary Records. Lond., 1843. 8vo.

1843. **Mazza, Vincenzo.** Storia di un Calcolo Salivate. 1843. V. M. A.

1844. **Morton, W. J.** Calculous concretions in the Horse, Dog, Ox, etc. Lond., 1844. 8vo.

1844. **Spooner, W. C.** Treatise on Sheep. Lond., 1844. 2nd edit., 1859. 12mo. Illustrated by Harvey, 1856. 12mo. V. M. A.

1844. **Morton, W. J.** Calculous Concretions in the Horse, Ox, Sheep, and Dog. Lond., 1844. 8vo. V. M. A.

1845? **Clark, Bracy.** Remarks, with Illustrations, of the Eroded Shuttle, or Nut-Bone (*os muciforme*) of the Horse's Foot (*Nucimalum*). Street, or Kennel-nail Cases. On Chippings, and Fracture of the Coffin-bone. Lond., n. d., fol. B. M.

1845. **Clark, Bracy.** Ring-bones; or Ossified Cartilages. 2nd edit. Lond., 1842, fol. B. M.

1845. Veterinary Record, the, and Transactions of the Veterinary Medical Association. Edited by Professors Spooner, Simonds, and Morton, vol. 1–6, &c. Lond., 1845, &c. 8vo.

[In progress.]

1845. **Youatt, William.** The Dog. Lond., 1845. 8vo. 2nd edit., 1848. 8vo. 1851. 8vo. V. M. A.

1846. **Miles, William,** of Exeter. The Horse's Foot, and How to keep it sound; with illustrations [and an Appendix]. Exeter, 1846, 1847. 8vo. Lond., 1850, 1856. 8vo. 1853. 4to.

[There are also other editions. The above are in B. M.]

1846. **Miles, William.** Treatise on the Horse's Foot. Lond., 1846. Imp. 8vo.

1847. **Youatt, William.** The Pig. Lond., 1847. 8vo. New edit. by Sydney, 1860. Post 8vo. V. M. A.

1848. **Simonds, J. B.** Treatise on the Small Pox in Sheep. Lond., 1848. Roy. 8vo.

1848. **Richardson, D. H.** Horses; their Varieties, Breeding, and Management, in Health and Disease. Dublin, 1848. 12mo.

1848. **Alexandre,** Médecin de la faculté de Paris. Traitement homœopathique des animaux. Paris, 1848. 8vo.

1848. **Brivet, V.** Précis du Squelette pour l'Hippiatrique. Paris, 1848, fol.

1848. **Brown, Thomas,** M.P.S. The Complete Farrier, a Manual of Veterinary Science. Lond., 1848. 8vo.

1848. **Auzoux, Louis.** Des tares osseuses dans le cheval. Paris, 1848. 8vo.

1849. Mayhew, E. Treatise on the Horse's Mouth. Lond., 1849. 8vo.

1849. Hodgson, T. R., V.S. Illustrative Farriery. A series of lithographs of the different Varieties of the Horse's Foot, etc. Lond., 1849. 4to.

1850? Dodd, G. H., M.D. The American Cattle Doctor, containing the necessary Information for . . . curing the Diseases of Oxen, Cows, Sheep, and Swine; with a great variety of original Receipts, &c. Boston. 12mo.

1850. Roper, William, T. C. E. The Horse in Health and Disease, &c. 2nd edit. Lond., 1850. 8vo.

1850. Briddon. The Diseases of the Horse and Cow clearly described, with recipes. 2nd edit. Lond., 1850. 12mo.

1850. Plasse, L. E. Découverte des causes du Morve et de la Farcin. Paris, 1850. 8vo.

1850. Brogniez, A. J. Manuel du Maréchal ferrant. Bruxelles, 1850. 8vo.

1851. Veterinary Homœopathy: Domestic Animals. Lond., 1851. 12mo. New edit., 1857. Abridged, 1859.

1851. Miles, W. The Horse's Foot, and how to keep it sound. New York, 1851. 12mo.

1851. Bouley, Henri. Traité de l'organization du pied du cheval comprenant l'étude de la structure . . . . . de cet organe. Paris, 1851. 8vo.

1851. Lacoste, J. De la Castration des Chevaux. Toulouse, 1851. 8vo.

1851. Mayer, T. W., Blaine on the Dog. 1851. V. M. A.

1851. Brogniez, A. J. Éléments de Chirurgie Vétérinaire à l'usage des études et de la pratique. Bruxelles, 1851. 8vo.

1852. Youatt. The Dog. Edited by E. J. Lewis. Philadelphia, U. S., 1852. 8vo.

1852. Haycock, W., V.S. and M.R.C.V.S. Elements of Veterinary Homœopathy. Lond., 1852. Post 8vo.

1852. Lees, John. An Essay on Pleuropneumonia, etc. Newport, 1852. 8vo.

1852. Defays, François. Manuel de Médecine Vétérinaire. Bruxelles, 1852. 12mo.

1852. **Major, Joseph.** Major's British Remedy for the cure of ringbone, spavin, curb . . . Also Major's synovitic lotion . . . and Major's bursalgic linament . . . With . . . directions for their use, &c. By J. M. Lond., 1852. 8vo.

1853. **Randall, Henry S.** The Structure and Diseases of the Horse, with their Remedies, &c. By W. O. Spooner. To which is added, An Account of the Breeds in the United States by H. S. R. Auburn, 1853. Post 8vo. 1855. 12mo.

1853. **Volpi, Alessandro.** Manuale popolare di veterinaria a comodo d' ogni proprietario di cavalli. Padova, 1853. 8vo.

1853. **Percivall, William,** M.R.C.S. The Diseases of the Chest . . . . . of the Horse. New edit. Lond., 1853. 8vo.

1853. **Williams, Dr.** Papers on Pleuropneumonia in Cattle. 1853. V. M. A.

1853. **Simonds, J. B.** Report on Pleuro-pneumonia in Cattle. V. M. A.

1853. **Spooner, W. C.** Treatise on the Veterinary Art. Lond., 1853. Post 8vo.

1854. **Haycock, W.** Hysteria in the Mare. Lond., 1854. 8vo.

1854. **Rush, John.** The Handbook of Veterinary Homœopathy, or the Homœopathic Treatment of Horses, Cattle, Sheep, Dogs, & Swine. With numerous additions from the 7th German Edition of Dr. F. E. Günther's Veterinary Homœopathy, translated by J. F. Scheck, M.D. Philadelphia, 1854. 8vo.

1854. **Simonds, J. P.** Age of the Ox, Sheep, and Pig. Lond., 1854. 8vo.

1854. **Mayhew, Edward.** Dogs, their Management and Treatment. Lond., 1854. Post 8vo. 1862. 12mo.

1854. **Haycock, W.** Hysteria in the Mare, with Illustrative Cases. Lond., 1854. 8vo.

1854. **Dadd, George,** M.D. The Modern Horse Doctor. Boston, 1854. 12mo.

[Author of "The Anatomy and Physiology of the Horse," and "The Reformed Cattle Doctor."]

1854. **Raspail, François Vincent.** Le fermier vétérinaire, ou Méthode . . . . de guérir les animaux domestique, etc. Paris, 1854. 18mo.

1855. **Miles, William.** A Plain Treatise on Horse-shoeing. With Illustrations. Lond., 1855, 1858, 1860, 1862, 1865, 1868. 8vo.

[These are all the editions published, all in B. M.]

1855. **Gamgee, John,** the Elder. Veterinary Education. An Inaugural Lecture. Lond., 1855. 8vo.

1855. **Percivall, William.** The Diseases of the Digestive Organs of the Horse, etc. New edit. Lond., 1855. 8vo.

1855. **Schaefer, Johann Cristoph.** Veterinary Homœopathy, by S. Translated from the German, and edited by W. H. Smith, V.S. New York, 1855. 8vo.

1855. **Dubourdieu, Charles.** Simples observations sur les ferrure. Bordeaux, 1855. 8vo.

1856. **Günther, Friedrich August.** New Manual of Homœopathic Veterinary Medicine, etc. Translated from the German of F. A. G. Boston, 1856. 8vo.

1856. **Tombari, Telesforo.** Medicina Veterinaria, &c. Rome, 1856. 8vo.

1856. **Gautier, Mille.** La morve et le farcin ne sont plus incurables. Paris, 1856. 8vo.

1857. **Gamgee, Joseph Samson.** The Cattle Plague and Diseased Meat in their relations with the Public Health. A Letter to . . . Sir G. Grey, &c. Lond., 1857. 8vo.

1857. **Moore, James.** Outlines of Veterinary Homœopathy, &c. Manchester, 1857. 8vo.

1857. **De Couto, Don José Ferrer.** Manual de Veterinaria y equitacion, Paris, 1857. 18mo.

1858. **Haycock, W.** Contributions to the Pathology and Practice of Veterinary Surgery and Medicine. Lond., 1858. 8vo.

1858. Edinburgh Veterinary Review, The, and Annals of Comparative Pathology. No. 1–58. Edin., 1858–64. 8vo. Continued as The Veterinary Review and Stockowners' Journal. Edited by J. Gamgee. Nos. 1–11. Edin., 1865. 8vo.

[No more published.]

1858. **Gamgee, John,** the Elder. The Veterinarian's *Vade Mecum.* Edin., 1858. 8vo. V. M. A.

1858. **Miles, W.** Paper on Horse-shoeing, in the Transactions of the Massachusetts Society for Promoting Agriculture. N. Ser. vol. 1. Boston, U. S., 1858. 8vo.

1859. **Haycock, W.** The Gentleman's Stable Manual, or the Principles and Practice of Veterinary Medicine and Surgery. London, 1859. 3rd edit, 1861. Post 8vo.

1860. **Gamgee, John**, the Elder. Synopsis of a Course of Lectures on Veterinary Medicine and Surgery. Edin., 1860. 12mo.

1861. **Gamgee, J.** Our domestic animals in health and disease. Edin., 1861–62. 4 pts. Post 8vo.

1861. **Mayhew, E.** Illustrated Horse Doctor. New York, 1861. 8vo.

1861. **Gamgee, John**, the Elder. Dairy Stock; its Selection, Diseases, and Produce, with a Description of the Brittany Breed. Edin., 1861. 8vo.

1861. Veterinary Directory, The; or Annual Register of the Members of the Royal College of Veterinary Surgeons, besides the Unqualified Practitioners in the United Kingdom and the Colonies. Edin., 1861, etc. 8vo.

[In progress.]

1861. **Gamgee, John**, the Elder, and **Law, James**, Professor in the New Veterinary College, Edinburgh. General and Descriptive Anatomy of the Domestic Animals. Vol. 1. Edin., 1861, etc. 8vo.

[In progress.]

1861. **Morton, W. J.** Veterinary Toxicological Chart-case. N. e. on roller. Lond., 1861.

1862. **Merche.** Mémoire sur les Principaux Systèmes de Ferrure. Paris, 1862.

1862. **Gerlach, A. C.** Handbuch der gerichtlichen Thierheilkunde. Berlin, 1862. 8vo.

1862. **Simonds, J. B.** Rot in Sheep; its Nature, Cause, etc. Lond., 1862. 8vo.

1862. **Mayhew, E.** Horse Doctor Illustrated. 3rd edit. Lond., 1862. 8vo.

1863. **Gamgee, John**, the Elder. The Diseases of Animals in relation to public health and prosperity. A Lecture . . . reprinted from the Edinburgh Veterinary Review. Edin., 1803. 8vo.

1863. **Fitzwygram**, Lieut.-Col. 15th Hussars. Notes on Shoeing Horses. 2nd edition, revised and enlarged. Lond., 1863. 8vo.

863. Graefe, Carl. Die Hippologische Literatur von 1848 bis einschliesslich 1857. Verzeichniss der in diesem Zeitraum über Alles was das Pferd betrifft, erschienenen Bücher, mit biographischen Notizen über die Verfasser. Bearbeitet von C. G. Leipzig, 1863. 8vo. P.O.

[Includes books of all languages. The English list seems by no means complete, but it is still very valuable.]

1864. Mayhew, E. Illustrated Horse Management. Lond., 1864. 8vo.

1866. Gamgee, John, the Elder. The Cattle Plague, with official reports of the International Veterinary Congresses, held in Hamburg 1863, and in Vienna 1865. Lond., 1866. 8vo.

1866. Gamgee, Arthur, and Gamgee, John. Equinia, or Glanders Hydrophobia. By J. G. and A. G. in J. R. Reynold's System of Medicine. Lond., 1866, &c. 8vo.

[In progress.]

1866. Nickard. Mémoires de la Société Nationale des Antiquaires de France. 1866.

1867. La Maréchalerie Française. Paris, 1867.

1867. Meguin, J. P. De l'Origine de la Ferrure du Cheval. Paris, 1865.

1867. Defays, F. Annales de Médecine Vétérinaire. Brussels, 1867.

1867. Veterinary Gazette, the; a weekly journal, &c. Lond., 1867, etc.

[In progress.]

1869. Haycock, William, Veterinary Surgeon, M.R.C.V.S. Horses, how they ought to be shod; being a Plain and Practical Treatise on the Principles and Practice of the Farrier's Art. Copiously illustrated. Lond., 1869. 4to.

1869. Tuson, Richard V., F.C.S. Professor of the Royal Veterinary College, &c. A Pharmacopæia . . . for the use of Practitioners and Students of Veterinary Medicine. Lond., 1869. 8vo.

1869. Fleming, George, F.R.G.S., F.A.S.L., &c. Horse-Shoes and Horse-Shoeing; their Origin, History, Uses, and Abuses. 210 Illustrations. Lond., 1869. 8vo P. O.

1869. Fitzwygram, Lieut-Col. 15th Hussars. Horses an *Stables.* With Illustrations. Lond., 1869. 8vo.

1870. **Clark Bracy.** The Foot of the Horse: its true nature, structure, . . . explained. To which are added, Observations on the ruinous effects of the principle involved in the ordinary Shoe, and a treatise on the new principle of expansion shoeing. With illustrations. 5 pts. London. 1870. 4to. B. M.

[Each part has a distinct pagination and register.]

1871. **Gamgee, Joseph**, Veterinary Surgeon. A Treatise on Horse-shoeing and Lameness. Lond., 1871.

THE DATES OF THE FOLLOWING BOOKS HAVE NOT BEEN DISCOVERED :—

Ars Medica, seu ars medendi equos, bonosque cognoscendi. Basil, n. d. B. A.

Bonneberie, Saboureux de la. Art Vétérinaire par Réné Végèce, traduit du Latin par S. d. l. B. B. A.

[A translation of Vegetius Artis Veterinaria, &c. Lib. IV.]

Bouley, H. Dictionnaire Vétérinaire.

Bowers, R. Treatise on the Diseases of Horses. Lond. 8vo.

Briddon, J. A. Practical Treatise on Veterinary Art. Lond.

Brown, Thomas. Manual of Modern Farriery. Lond. 8vo.

Bull, B. B. System of Veterinary Instruction. Lond. 8vo.

Clarendon, Thomas. Treatise on the Foot of the Horse. Lond. 12mo.

Earl, Abel. Treatise on the Disorders of Meat Cattle. Lond. 12mo.

Ferguson, Hugh. Blood-Letting in Diseases of Horses. Lond. Post 8vo.

Goodwin, Joseph. Accounts of Modes of Shoeing Horses. Lond. 8vo.

Gunther, F. A. Manual of Homœopathic Veterinary Medicine. Lond. Post 8vo.

Haycock, W. On Equine Disease.

Haycock, W. Villitis.

Heusinger. Recherches de Pathologie Comparée.

Hinds, John. Veterinary Surgery and Practice of Medicine. Lond. 12mo.

Hinds, John. Manual of the Veterinary Art. Lond. 12mo.

Hinds, John. Groom's Oracle. Lond. 12mo.

Joce, James. Hand Book of Farriery. Lond. 8vo.

Lawrence, J. St. Bel's Farrier's and Shoeing Smith's New Guide.

Lawrence, Richard. The Complete Farrier and British Sportsman. Lond. 4to.

Percivall, W. Lectures on the Veterinary Art. 3 vols. Lond. 8vo.

Percivall, W. Lectures on the Form and Action of the Horse. 3 vols. Lond. 8vo.

Percivall, W. Hippopathology. 4 vols. Lond. 8vo.

Percivall, William. Anatomy of the Horse. Lond. 8vo.

Pursglove, J. Guide to Practical Farriery. Lond., 1823. 8vo.

Richard, A. De la Conformation du Cheval. Paris, n. d. 8vo.

Rosser, W. H. Improved Art of Farriery. Lond. 8vo.

Skeavington, George. Horseman's Monitor. By Clark. Lond. 18mo.

Skeavington, George. Modern System of Farriery. Lond. 4to.

Small, Matthew. Veterinary Tablet. Lond. 12mo (in case).

Stevenson, John. Cattle Doctor's Vade Mecum. Lond. 18mo.

Webb, James. Farrier's Guide to Diseases of Cattle. Lond. 12mo.

White, James. Farriery.

White, James. Compendium of Cattle Medicine. Lond. 8vo.

Vines, Richard. Treatise on Diseases of the Horse. Lond. 8vo.

Wilkinson, William. Treatise on Two Important Diseases of the Horse. Lond. 8vo.

Winter, J. W. Treatise on the Horse in Health and Disease. Lond. 8vo.

INDEX OF SUBJECT MATTER.

[The numbers refer to the pages on which the Abridgments commence. The names printed in *Italic* are those of the persons by whom the inventions have been communicated to the Applicants for Letters Patent.]

Balls for horses:
- Radley, 1.

Bandages:
- Rotch, 14.
- Mennons (*Wachter*), 91.
- Hibbert, 114.

Bath:
- Hibbert, 114.

Bleeding animals:
- Weiss, 13.
- Poole, 30.

Boot for horses:
- Purden, 7.
- Pidding, 34.

Boring instrument for hoofs:
- Manton, 8.

Caoutchouc. *See* India-rubber.

Caulks
- Maynard, 53.

Clipping instruments. *See* Shears.

Colouring horses. *See* Staining.

Composition for curing diseased feet:
- Castets, 35.

Composition for curing scab, &c.:
- Newton, W. E. (*Hayes*), 95.

Composition for dressing sheep. *See* Sheep, &c.

Cork for shoes:
- Haines, 46.

Crampon:
- Anelli, 49.

Disinfectant:
- Hibbert, 114.
- Bobœuf, 117.
- Larnaudes, 118.
- Davis, 120.

Embrocation. *See also* Lotion:
- Major, 33.
- Hibbert, 114.

Expanding vessels of body, instrument for:
- Hodges and Brockedon, 31.

Fleams. *See* Bleeding.

Fomenting, apparatus for:
- Blackwell, 94.

Food, medicated:
- Napier, 130.

Frog, artificial:
- Coleman, 4.

Gutta-percha. *See* India-rubber.

Horse shoes. *See* Shoes, horse.

India-rubber or gutta-percha for horse-shoes, &c.:
- Rotch, 14.
- Keene, 27.
- Hobson, 30.
- Tillie, 32.
- Pidding, 34.
- Newton, W. E., 35.
- Scott, 37.
- Pidding, 40.
- Johnson, 43.
- Pidding, 45.
- Coates, 46.
- Scott, 55.
- Page, 96.
- Mulet, 101.

India-rubber, &c.—*cont.*
Fowler, 105.
Clarke (*Wilkinson*), 122.

Injecting:
Ellison, 120.

Injecting machine:
Loysel, 39.

Knee-cap:
Rotch, 14.
Haines, 46.
Brooman (*Le Febvre*), 60.
Desplas, 132 (*Appendix*).
Norrington, 95.

Lancets. *See* Bleeding.

Lavement:
Loysel, 39.

Lotion. *See also* Embrocation.
Major, 35.

Machinery for making shoes, nails, &c. *See* Shoes, &c., machinery for.

Measuring horse's foot:
Hobson, 30.
Combe, 64.

Medicines:
Radley, 1.
Watson, 2.
Fleet, 3.
Bagshaw and Harris, 52.
Newton, W. E., (*Adams*), 54.

Medicines, instrument for administering:
Huckvale, 32.

Nails for horse-shoes:
Coates, 4.
Spencer, 5.
Hall, 25.
Dorr, 25.
Vaux, 29.
Hill, 42.
Bousfield, 44.
Fontaine Moreau, 47.
Bacon, 56.
Owen, 62.
Gowing, 63.
Reynolds (*Coggshall*), 68.
Till, 68.
Norris and Till, 68.
Norris and Till, 71.
Snell (*Whittemore*), 75.
Newton, A. V. (*Mason*), 78.
Swindell, Russell, and Price, 79.
Massiaux, 79.
Davies (*Louvrier*), 82.
Quinard, 87.
Putnam, 90.

Nails for horse-shoes—*cont.*
Davies (*Louvrier*), 96.
Parkes, 103.
Fontainemoreau, 109.
Huggett, 117.
Lake (*Polsey*), 129.

Nicking tails, instrument for:
Baker, 18.

Ointment for sheep. *See also* Sheep, composition for:
Tomlinson and Hayward, 113.

Pad for frog:
Dickinson, 11.
Turnbull, 21.

Paint for hoofs:
Dickinson, 11.

Painting horses. *See* Staining.

Pill for poultry:
Baily, 35.

Plantoforme:
Combe, 64.

Respirator:
Hibbert, 114.
Hibbert, 116.

Roughing horses:
Hodgson, 12.
Vaux, 20.
Woodin, 26.
Hobson, 30.
Reeve, 36.
Clarke, 45.
Anelli, 49.
De Keyser, 54.
Matson, 57.
Smith, 62.
Gowing, 63.
Marsden and Lambert, 76.
Threlfall and Austen, 76.
Brooman (*Thiry*), 80.
Carr, 84.
Coppard, 98.
Norton, 93.
Batt, 101.
Coppard, 103.
Batt, 104.
Harris, 114,

Sandal, horse:
Vazie (*Appendix*), 131.
Percivall, 13.

Screws for horse-shoes:
Ince, 110.

Shears:
Clatworthy and Clatworthy, 7.
Sorby, 7.

Shears—*cont.*
Wilkinson, 8.
Francis, 33.

Sheep, composition for dressing:
Taylor, 37.
Bagshaw and Harris, 52.
Jones, 55.
Newton, A. V. (*Jaques*), 71.
Caunter, 105.
Tomlinson and Hayward, 113.
Hope, 121.
Law, 126.

Sheep, dipping mixtures for:
Davis, 120.
Dickinson, 128.

Sheep, medicine for:
Fleet, 3.
Bagshaw and Harris, 52.

Sheep-wash:
Newton, A. V. (*Jaques*), 71.
Standon, 86.

Shoes, horse:
Clark, 6.
Coleman, 7.
Lewis, 8.
Rotch, 9.
Coleman, 9.
Goldfinch, 10.
Harris, 10.
Dudley, 10.
Woodman, 12.
Hodgson, 12.
Percivall, 13.
Rotch, 14.
Springall, 18.
De Gournay, 18.
Harris, 19.
Vaux, 20.
Reynolds, 20.
Rodway, 21.
Turnbull, 21.
Neville, 22.
Home, 22.
Clarendon, 23.
Woodin, 26.
Powell, 27.
Black, 27.
Keene, 27.
Watney, 28.
Vaux, 29.
Parry, 29.
Hobson, 30.
Newton, W. E., 35.
Reeve, 36.
Scott, 37.
Bartholomew, 38.
Pidding, 40.
Gardner, 40.

Shoes, horse—*cont.*
Jarman, 41.
Cook, 43.
Johnson, 43.
Pidding, 45.
Coats, 46.
Haines, 46.
Short, 48.
Binks, 51.
Reay, 52.
Harris, 53.
Scott, 55.
Matson, 57.
Bartholomew, 58.
Smith, 62.
Bartholomew, 63.
Thomas, 63.
Bartholomew, 65.
Brooman (*Johnson*), 66.
Dawes, 70.
Bartholomew, 72.
Truman, 73.
Stocker, 74.
Stocker, 75.
Marsden and Lambert, 76.
Threlfall and Austen, 76.
Douglas, 77.
Bousfield (*Goodenough*), 77.
Withers, 78.
Edwards, 79.
Brooman (*Thiry*), 80.
Stocker and Stocker, 81.
Carr, 84.
Silver and Pringle, 85.
Ede, 85.
Charlton, 85.
Kendall, 86.
Barbezières, 88.
Tolhausen (*Clément*), 89.
Moss, 90.
Biers, 91.
Payne, 92.
Wells, 92.
Coppard, 93.
Wells, 94.
Page, 96.
Middleton, 98.
Page, 99.
Bartholomew, 100.
Mavor, 100.
Mulet, 101.
Green, 102.
Pidding, 102.
Coppard, 103.
Batt, 104.
Clark (*Peschell and Frenaye*), 104.
Fowler, 105.
Clark (*Charlier*), 108.
Clark (*Mallet*), 108.
Ince, 110.
Symmons, 111.
Davies (*Viel and Sibut*), 111.
Newton, W. E. (*Watrin*), 112.
Sainty, 113.
Gamgee, 119.
Clark (*Wilkinson*), 122.

Shoes, horse—*cont.*
Sainty, 125.
Gedge (*Peillard*), 128.

Shoes, horse, machinery for making:
Playfair, 2.
Moorcroft, 3.
Moorcroft, 5.
Vazie (*Appendix*), 131.
Stocker and Stocker, 15.
Stocker, 15.
Jevons, 17.
Berry, 18.
Hill, 24.
Hobson, 30.
Bellford, 36.
Johnson, 41.
Burden, 48.
Newton, W. E., 49.
Newton, W. E., 56.
Newton, A. V., 59.
Stocker, 60.
Newton, A. V., 61.
Newton, A. V. (*Lewis*), 64.
Cutler (*Perkins*), 66.
Stocker, 67.
Barker and Barker (*Burden*), 69.
Dowler and Farmer, 72.
Stocker, 75.
Rennie and Moffat, 80.
Bousfield (*Cutler*), 83.
Davies (*Taylor*), 83.
Stocker and Stocker, 88.
Haseltine (*Brainerd and Burridge*), 93.
Williams (*Wheeler*), 97.
Stocker, 99.
Newton, A. V. (*Seeley*), 105.
Bonneville (*Bastien*), 106.
Newton, W. E. (*Verzoli*), 107.
Brooman (*Bastien*), 109.
Anderson, 110.
Symmons, 111.
Davies (*Viel and Sibut*), 111.
Gamgee, 119.
Gedge (*Falatien*), 125.
Batchelder, 126.

Shoes, horse, methods of attaching:
Clark, 6.
Lewis, 8.
Manton, 8.
Rotch, 9.
Goldfinch, 10.
Percivall, 13.
Turnbull, 21.
Clarendon, 23.
Woodin, 26.

Shoes, horse, &c.—*cont.*
Watney, 28.
Parry, 29.
Newton, W. E., 35.
Barthomew, 38.
Pidding, 40.
Gardner, 40.
Jarman, 42.
Cook, 43.
Clarke, 45.
Coats, 46.
Short, 48.
Harris, 53.
Scott, 55.
Bartholomew, 58.
Bartholomew, 63.
Bartholomew, 65.
Truman, 73.
Moss, 90.
Biers, 91.
Wells, 93.
Wells, 94.
Page, 96.
Middleton, 98.
Page, 99.
Bartholomew, 100.
Mulet, 101.
Ince, 110.
Newton, W. E (*Watrin*), 112.
Sainty, 113.
Clark (*Wilkinson*), 122.
Sainty, 125.

Singeing lamp:
Savage, 38.

Slinging horses:
Gibbs, 66.

Staining horses:
Vavasor, 1.
Johnston, 1.

Suction instruments for drawing off fluids from body:
Poole, 30.
Brundage, 33.
Damoiseau, 81.

Syringe:
Nye, 16.

Tobacco for dressing sheep:
Newton, A. V. (*Jaques*), 71.

Varnish for hoofs:
Dickinson, 11.

LONDON:
Printed by George E. Eyre and William Spottiswoode,
Printers to the Queen's most Excellent Majesty.

PATENT LAW AMENDMENT ACT, 1852.

LIST OF WORKS printed by order of THE COMMISSIONERS OF PATENTS FOR INVENTIONS, and sold at the PATENT OFFICE, 25, Southampton Buildings, Chancery Lane, London.

I.

1. SPECIFICATIONS of PATENTS for INVENTIONS, DISCLAIMERS, &c., enrolled under the Old Law, from A.D. 1617 to Oct. 1852, comprised in 13,561 Blue Books, or 691 thick vols. imp. 8vo. Total cost price about 600*l.*
2. SPECIFICATIONS of INVENTIONS, DISCLAIMERS, &c., deposited and filed under the Patent Law Amendment Act from Oct. 1, 1852, to Dec. 31, 1870, comprised in 59,025 Blue Books, or 1,842 thick vols. imp. 8vo. Total cost price, about 1,848*l.*

II.

1. CHRONOLOGICAL INDEX of PATENTS of INVENTION from A.D. 1617 to Oct. 1852. 2 vols. (1554 pages). Price 30*s.* By Post, 33*s.* 2*d.*

   ALPHABETICAL INDEX for the above period. 1 vol. (647 pages). Price 20*s.* By Post, 21*s.* 5*d.*

   SUBJECT-MATTER INDEX for the above period. 2 vols. (907 pages). Second Edition. 1857. Price 2*l.* 16*s.* By Post. 2*l.* 18*s.* 8*d.*

   REFERENCE INDEX for the above period, pointing out the Office in which each enrolled Specification may be consulted; the Books in which Specifications, Law Proceedings connected with Inventions, &c. have been noticed. 1 vol. (710 pages). Second Edition. 1862. Price 30*s.* By Post, 31*s.* 5*d.*

   APPENDIX to REFERENCE INDEX, containing abstracts from such of the early Patents and Signet Bills as describe the nature of the Invention. 1 vol. (91 pages). Price 4*s.* By Post 4*s.* 6*d.*

2. CHRONOLOGICAL INDEXES of APPLICATIONS for PATENTS and PATENTS GRANTED from Oct. 1 to Dec. 31, 1852, and for the year 1853. 1 vol. (258 pages). Price 11*s.* By Post, 12*s.*

ALPHABETICAL INDEXES for the above periods. 1 vol. (181 pages). Price 13*s.* By Post, 13*s.* 8*d.*

SUBJECT-MATTER INDEX for 1852. 1 vol. (132 pages). Price 9*s.* By Post, 9*s.* 7*d.*

SUBJECT-MATTER INDEX for 1853. 1 vol. (291 pages). Price 16*s.* By Post, 16*s.* 11*d.*

3. CHRONOLOGICAL INDEX for 1854. 1 vol. (167 pages). Price 6*s.* By Post, 6*s.* 7*d.*

ALPHABETICAL INDEX for 1854. 1 vol. (119 pages). Price 7*s.* By Post, 7*s.* 7*d.*

SUBJECT-MATTER INDEX for 1854. 1 vol. (311 pages). Price 16*s.* 6*d.* By Post, 17*s.* 6*d.*

4. CHRONOLOGICAL INDEX for 1855. 1 vol. (188 pages). Price 6*s.* 6*d.* By Post, 7*s.* 2*d.*

ALPHABETICAL INDEX for 1855. 1 vol. (129 pages). Price 7*s.* 6*d.* By Post, 8*s.* 1*d.*

SUBJECT-MATTER INDEX for 1855. 1 vol. (311 pages). Price 17*s.* By Post, 17*s.* 11*d.*

5. CHRONOLOGICAL INDEX for 1856. 1 vol. (189 pages). Price 6*s.* 6*d.* By Post, 7*s.* 1*d.*

ALPHABETICAL INDEX for 1856. 1 vol. (143 pages). Price 8*s.* By Post, 8*s.* 7*d.*

SUBJECT-MATTER INDEX for 1856. 1 vol. (335 pages). Price 18*s.* 6*d.* By Post, 19*s.* 7*d.*

6. CHRONOLOGICAL INDEX for 1857. 1 vol. (196 pages). Price 6*s.* 6*d.* By Post, 7*s.* 2*d.*

ALPHABETICAL INDEX for 1857. 1 vol. (153 pages). Price 8*s.* By Post, 8*s.* 8*d.*

SUBJECT-MATTER INDEX for 1857. 1 vol. (367 pages). Price 19*s.* 6*d.* By Post, 20*s.* 8*d.*

7. CHRONOLOGICAL INDEX for 1858. 1 vol. (188 pages). Price 6*s.* By Post, 6*s.* 8*d.*

ALPHABETICAL INDEX for 1858. 1 vol. (148 pages). Price 8*s.* By Post, 8*s.* 7*d.*

SUBJECT-MATTER INDEX for 1858. 1 vol. (360 pages). Price 19*s.* 6*d.* By Post, 20*s.* 6*d.*

8. CHRONOLOGICAL INDEX for 1859. 1 vol. (196 pages). Price 6*s.* 6*d.* By Post, 7*s.* 1*d.*

ALPHABETICAL INDEX for 1859. 1 vol. (188 pages). Price 10*s.* By Post, 10*s.* 7*d.*

SUBJECT-MATTER INDEX for 1859. 1 vol. (381 pages). Price 20*s.* By Post, 20*s.* 11*d.*

9. CHRONOLOGICAL INDEX for 1860. 1 vol. (209 pages). Price 7*s.* By Post, 7*s.* 7*d.*
ALPHABETICAL INDEX for 1860. 1 vol. (203 pages). Price 10*s.* 6*d.* By Post, 11*s.* 1*d.*
SUBJECT-MATTER INDEX for 1860. 1 vol. (405 pages). Price 22*s.* By Post, 23*s.*

10. CHRONOLOGICAL INDEX for 1861. 1 vol. (215 pages). Price 7*s.* By Post, 7*s.* 7*d.*
ALPHABETICAL INDEX for 1861. 1 vol. (222 pages). Price 10*s.* 6*d.* By Post, 11*s.* 2*d.*
SUBJECT-MATTER INDEX for 1861. 1 vol. (442 pages). Price 23*s.* By Post, 24*s.* 1*d.*

11. CHRONOLOGICAL INDEX for 1862. 1 vol. (237 pages). Price 7*s.* 6*d.* By Post, 8*s.* 2*d.*
ALPHABETICAL INDEX for 1862. 1 vol. (240 pages). Price 11*s.* 6*d.* By Post, 12*s.* 2*d.*
SUBJECT-MATTER INDEX for 1862. 1 vol. (465 pages). Price 23*s.* By Post, 24*s.* 1*d.*

12. CHRONOLOGICAL INDEX for 1863. 1 vol. (220 pages). Price 7*s.* By Post, 7*s.* 7*d.*
ALPHABETICAL INDEX for 1863. 1 vol. (218 pages). Price 11*s.* By Post, 11*s.* 8*d.*
SUBJECT-MATTER INDEX for 1863. 1 vol. (432 pages). Price 22*s.* By Post, 23*s.*

13. CHRONOLOGICAL INDEX for 1864. 1 vol. (222 pages). Price 7*s.* By Post, 7*s.* 7*d.*
ALPHABETICAL INDEX for 1864. 1 vol. (220 pages). Price 11*s.* By Post, 11*s.* 8*d.*
SUBJECT-MATTER INDEX for 1864. 1 vol. (446 pages). Price 23*s.* By Post, 24*s.* 1*d.*

14. CHRONOLOGICAL INDEX for 1865. 1 vol. (230 pages). Price 7*s.* By Post, 7*s.* 7*d.*
ALPHABETICAL INDEX for 1865. 1 vol. (236 pages). Price 11*s.* 6*d.* By Post, 12*s.* 2*d.*
SUBJECT-MATTER INDEX for 1865. 1 vol. (474 pages). Price 23*s.* By Post, 24*s.* 1*d.*

15. CHRONOLOGICAL INDEX for 1866. 1 vol. (239 pages). Price 7*s.* By Post, 7*s.* 8*d.*
ALPHABETICAL INDEX for 1866. 1 vol. (243 pages). Price 11*s.* 6*d.* By Post, 12*s.* 2*d.*
SUBJECT-MATTER INDEX for 1866. 1 vol. (465 pages). Price 23*s.* By Post, 24*s.* 4*d.*

16. CHRONOLOGICAL INDEX for 1867. 1 vol. (254 pages). Price 7*s.* 6*d.* By Post, 8*s.* 2*d.*

ALPHABETICAL INDEX for 1867. 1 vol. (258 pages). Price 12*s.* By Post, 12*s.* 8*d.*

SUBJECT-MATTER INDEX for 1867. 1 vol. (508 pages). Price 25*s*. By Post, 26*s*. 2*d*.

DESCRIPTIVE INDEX (Abridgments of Provisional and Complete Specifications) for 1867.
- *a*. Quarter ending 31st March. 1 vol. (228 pages). Price 1*s*. 8*d*. By Post, 2*s*. 1*d*.
- *b*. Quarter ending 30th June. 1 vol. (224 pages). Price 1*s*. 8*d*. By Post, 2*s*. 1*d*.
- *c*. Quarter ending 30th September. 1 vol. (196 pages). Price 1*s*. 8*d*. By Post, 2*s*.
- *d*. Quarter ending 31st December. 1 vol. (232 pages). Price 1*s*. 8*d*. By Post, 2*s*. 1*d*.

17. CHRONOLOGICAL INDEX for 1868. 1 vol. (274 pages). Price 8*s*. By Post, 8*s*. 8*d*.

ALPHABETICAL INDEX for 1868. 1 vol. (291 pages). Price 13*s*. By Post, 13*s*. 10*d*.

SUBJECT MATTER INDEX for 1868. 1 vol. (632 pages). Price 30*s*. By Post, 31*s*. 5*d*.

DESCRIPTIVE INDEX (Abridgments of Provisional and Complete Specifications) for 1868.
- *a*. Quarter ending 31st March. 1 vol. (236 pages). Price 1*s*. 8*d*. By Post, 2*s*. 1*d*.
- *b*. Quarter ending 30th June. 1 vol. (218 pages). Price 1*s*. 8*d*. By Post, 2*s*. 1*d*.
- *c*. Quarter ending 30th September. 1 vol. (194 pages). Price 1*s*. 8*d*. By Post, 2*s*.
- *d*. Quarter ending 31st December. 1 vol. (224 pages). Price 1*s*. 8*d*. By Post, 2*s*. 1*d*.

18. CHRONOLOGICAL AND DESCRIPTIVE INDEX (containing the Abridgments of Provisional and Complete Specifications) for 1869.
- *a*. Quarter ending 31st March. 1 vol. (226 pages). Price 1*s*. 8*d*. By Post, 2*s*. 1*d*.
- *b*. Quarter ending 30th June. 1 vol. (234 pages). Price 1*s*. 8*d*. By Post, 2*s*. 1*d*.
- *c*. Quarter ending 30th September. 1 vol. (200 pages). Price 1*s*. 8*d*. By Post, 2*s*. 1*d*.
- *d*. Quarter ending 31st December. 1 vol. (212 pages). Price 1*s*. 8*d*. By Post, 2*s*. 1*d*.

ALPHABETICAL INDEX for 1869. 1 vol. (272 pages). Price 13*s*. By Post, 13*s*. 9*d*.

SUBJECT MATTER INDEX for 1869. 1 vol. (587 pages). Price 28*s*. By Post, 29*s*. 2½*d*.

19. CHRONOLOGICAL AND DESCRIPTIVE INDEX (containing the Abridgments of Provisional and Complete Specifications) for 1870.
- *a*. Quarter ending 31st March. 1 vol. (222 pages). Price 1*s*. 8*d*. By Post, 2*s*. 1*d*.

d. Quarter ending 30th June. 1 vol. (218 pages). Price 1*s.* 8*d.* By Post, 2*s.* 1*d.*

c. Quarter ending 30th September. 1 vol. (168 pages). Price 1*s.* 8*d.* By Post, 2*s.*

d. Quarter ending 31st December. 1 vol. (182 pages). Price 1*s.* 8*d.* By Post, 2*s.*

ALPHABETICAL INDEX for 1870. 1 vol. (242 pages). Price 12*s.* By Post, 12*s.* 8*d.*

20. CHRONOLOGICAL AND DESCRIPTIVE INDEX (containing the Abridgments of Provisional and Complete Specifications) for 1871, with Indexes of Names and Subject Matter. Published in weekly numbers, price 4*d.* each.*

III.

ABRIDGMENTS (in Classes and Chronologically arranged) of SPECIFICATIONS of PATENTED INVENTIONS, from the earliest enrolled to those published under the Act of 1852.

These books are of 12mo. size, and each is limited to inventions of one class only. They are so arranged as to form at once a Chronological, Alphabetical, Subject-matter, and Reference Index to the class to which they relate. Inventors are strongly recommended, before applying for Letters Patent, to consult the classes of Abridgments of Specifications which relate to the subjects of their inventions, and by the aid of these works to select the Specifications they may consider it necessary to examine in order to ascertain if their inventions are new.

The following series of Abridgments do not extend beyond the end of the year 1866. From that date the Abridgments have not been published in classes, but will be found in chronological order in the "Chronological and Descriptive Index" (*see* Section II. of this List of Works). It is intended, however, to publish these Abridgments in classes as soon as the Abridgments of all the Specifications from the earliest period to the end of 1866 have appeared in a classified form. Until that takes place the Inventor (by the aid of the Subject Matter Index for each year) can continue his examination of the Abridgments relating to the subject of his invention in the Chronological and Descriptive Index.

The classes already published are,—

1. Drain Tiles and Pipes, price 4*d.*, by post 5*d.*
2 Sewing and Embroidering (*2nd edition*), price 1*s.* 6*d.*, by post 1*s.* 9*d.*
3. Manure, price 4*d.*, by post 5*d.*
4. Preservation of Food, Part I., A.D. 1691-1855, price 4*d.*, by post 5*d.*—Part II., A.D. 1856-1866, price 6*d.*, by post 7*d.*
5. Marine Propulsion, price 1*s.* 10*d.*, by post 2*s.* 2*d.*
6. Manufacture of Iron and Steel, Parts I., II., & III., A.D. 1621-1857, price 1*s.* 6*d.*, by post 1*s.* 9*d.*—Part IV., A.D. 1857-1865 price 2*s.* 6*d.*, by post 2*s.* 8*d.*
7. Aids to Locomotion, price 6*d.*, by post 7*d.*
8. Steam Culture, price 8*d.*, by post 10*d.*
9. Watches, Clocks, and other Timekeepers, Part I., A.D. 1661-1856, price 8*d.*, by post 10*d.*—Part II., A.D. 1857-1866, price 8*d.*, by post 9½*d.*

---

* *See* Notice on page 16.

10. Fire-arms and other Weapons, Ammunition, and Accoutrements, Part I., A.D. 1588–1858, price 1*s*. 4*d*., by post 1*s*. 8*d*.—Part II., A.D. 1858–1866, price 2*s*. 2*d*., by post 2*s*. 6*d*.
11. Paper. Manufacture of Paper Pasteboard, and Papier-mâché, price 10*d*., by post 1*s*.
12. Paper. Cutting, Folding, and Ornamenting; including Envelopes, Cards, Paper-hangings, &c., price 8*d*., by post 10*d*.
13. Typographic, Lithographic, & Plate Printing. Part I., A.D. 1617–1857, price 2*s*. 8*d*., by post 3*s*. 4*d*.—Part II., A.D. 1858–1861, price 2*s*., by post 2*s*. 6*d*.
14. Bleaching, Dyeing, and Printing Yarns and Fabrics, price 3*s*. 4*d*., by post 4*s*. 2*d*.
15. Electricity and Magnetism, their Generation and Applications, Part I., A.D. 1766–1857, price 3*s*. 2*d*., by post 4*s*.—Part II., A.D. 1858–1866 price 9*s*. 4*d*., by post 9*s*. 10*d*.
16. Manufacture and Applications of India-rubber, Gutta-percha, &c.; including Air, Fire, and Water-proofing, price 2*s*. 8*d*., by post 3*s*. 4*d*.
17. Production and Applications of Gas, Part I., A.D. 1681–1858, price 2*s*. 4*d*., by post 3*s*.—Part II., A.D. 1859–1866, price 7*s*., by post 7*s*. 5*d*.
18. Metals and Alloys, price 1*s*. 10*d*., by post 2*s*. 4*d*.
19. Photography, Part I., A.D. 1839–1859, price 8*d*., by post 10*d*.—Part II., A.D. 1860–1865, price 1*s*. 8*d*., by post 1*s*. 10*d*.
20. Weaving, Part I., A.D. 1620–1859, price 4*s*., by post 5*s*.—Part II., A.D. 1860–1866, price 2*s*. 8*d*., by post, 3*s*. 1*d*.
21. Ship Building, Repairing, Sheathing, Launching, &c., Part I., A.D. 1618–1860, price 2*s*. 4*d*., by post 3*s*.—Part II., A.D. 1861–1866, price 2*s*. 6*d*., by post 3*s*.
22. Bricks and Tiles. Part I., A.D. 1619–1860, price 1*s*., by post 1*s*. 4*d*.—Part II., A.D. 1861–1866, price 8*d*., by post 9*d*.
23. Plating or Coating Metals with Metals, Part I., A.D. 1637–1860, price 10*d*., by post 1*s*. 2*d*.—Part II., A.D. 1861–1865, price 10*d*., by post 11*d*.
24. Pottery, Part I., A.D. 1626–1861, price 10*d*., by post 1*s*.—Part II., A.D. 1862–1866, price 6*d*., by post 7*d*.
25. Medicine, Surgery, and Dentistry, price 3*s*. 4*d*., by post 4*s*.
26. Music and Musical Instruments (*2nd edition*), price 1*s*. 10*d*., by post 2*s*. 2*d*.
27. Oils—Animal, Vegetable, and Mineral, price 6*s*. 6*d*., by post 7*s*.
28. Spinning; including the Preparation of Fibrous Materials, and the Doubling of Yarns and Threads, Part I., A.D. 1624–1863, price 24*s*., by post 25*s*. 5*d*.—Part II., A.D. 1864–1866, price 2*s*. by post 2*s*. 4*d*.
29. Lace and other Looped and Netted Fabrics, price 10*s*., by post 10*s*. 8*d*.
30. Preparation and Combustion of Fuel, price 17*s*., by post 17*s*. 9*d*.
31. Raising, Lowering, and Weighing, Part I., A.D. 1617–1865, price 11*s*., by post 11*s*. 8*d*.—Part II., A.D. 1866, price 6*d*., by post 7*d*.
32. Hydraulics, price 15*s*., by post 15*s*. 10*d*.
33. Railways, price 5*s*., by post 5*s*. 4*d*.
34. Saddlery, Harness, Stable Fittings, &c., price 1*s*., by post 1*s*. 2*d*.
35. Roads and Ways, price 1*s*., by post 1*s*. 2*d*.
36. Bridges, Viaducts, and Aqueducts, price 10*d*., by post 1*s*.
37. Writing Instruments and Materials, price 1*s*. 4*d*., by post 1*s*. 7*d*.
38. Railway Signals and Communicating Apparatus, price 5*s*. 10*d*., by post 6*s*. 2*d*.
39. Furniture and Upholstery, price 2*s*., by post 2*s*. 4*d*.
40. Acids, Alkalies, Oxides, and Salts price 3*s*. 8*d*., by post 4*s*. 4*d*.
41. Aeronautics, price 4*d*., by post 5*d*.
42. Preparation and Use of Tobacco, price 10*d*., by post 1*s*.
43. *Books ,Portfolios*, Card-cases, &c., price 10*d*., by post 1*s*.

44. Lamps, Candlesticks, Chandeliers, and other Illuminating Apparatus, price 2s. 6d., by post 3s.

45. Needles and Pins, price 6d., by post 7d.

46. Carriages and other Vehicles for Railways, price 5s. 6d., by post 6s. 5d.

47. Umbrellas, Parasols, and Walking Sticks, price 10d., by post 11½d.

48. Sugar, price 1s. 10d., by post 2s. 1½d.

49. Steam Engine, Part I. (in two volumes), A.D. 1618–1859, price 9s. 4d., by post 10s. 10d.—Part II. (in two volumes), A.D. 1860–1866, price 4s. 10d., by post 5s. 7d.

50. Paints, Colours, and Varnishes, price 1s. 10d., by post 2s. 1½d.

51. Toys, Games, and Exercises, price 1s., by post 1s. 2d.

52. Ventilation, price 1s. 10d., by post 2s. 0½d.

53. Farriery; including the Medical and Surgical Treatment of Animals, price 1s., by post 1s. 2d.

IV.

COMMISSIONERS of PATENTS' JOURNAL, published on the evenings of Tuesday and Friday in each week. Price 2*d.* By Post, 3*d.* Annual Subscription, including postage, 23*s.* 6*d.*, which may be remitted by Post Office Order, made payable at the Post Office, Holborn, to Mr. Bennet Woodcroft, Clerk to the Commissioners, Patent Office.

Contents of Journal.

1. Applications for Letters Patent.
2. Grants of Provisional Protection for six months.
3. Inventions protected for six months by the deposit of a Complete Specification.
4. Notices to proceed.
5. Patents sealed.
6. Patents extended.
7. Patents cancelled.
8. Patents on which the third year's stamp duty of 50*l.* has been paid.
9. Patents which have become void by non-payment of the stamp duty of 50*l.* before the expiration of the third year.
10. Patents on which the seventh year's stamp duty of 100*l.* has been paid.
11. Patents which have become void by non-payment of the stamp duty of 100*l.* before the expiration of the seventh year.
12. Colonial Patents and Patent Law.
13. Foreign Patents and Patent Law.
14. Weekly price lists of printed Specifications, &c.
15. Official advertisements and notices of interest to Patentees and Inventors generally.

V.

INDEX to FOREIGN SCIENTIFIC PERIODICALS contained in the Free Public Library of the Patent Office, published on every alternate Friday evening. Price 2*d.* By Post, 2½*d.* Annual subscription, including postage, 5*s.* 5*d.*, which may be remitted by Post Office Order, made payable at the Post Office, Holborn, to Mr. Bennet Woodcroft, Clerk to the Commissioners, Patent Office.

VI.

1. PATENT LAW AMENDMENT ACTS (15 & 16 Vict. cap. 83, A.D. 1852; 16 Vict. cap. 5, A.D. 1853; and 16 & 17 Vict. cap. 115, A.D. 1853); together with the RULES and REGULATIONS issued by the Commissioners of Patents for Inventions, and by the Lord Chancellor and the Master of the Rolls, under the Acts 15 & 16 Vict. c. 83, and 16 & 17 Vict. c. 115. Price 6*d.* By Post, 7*d.*

2. APPENDIX to the SPECIFICATIONS of ENGLISH PATENTS for REAPING MACHINES. By B. WOODCROFT, F.R.S. Price 6*s.* 6*d.* By Post, 6*s.* 11*d.*

3. INDEX to ALL INVENTIONS PATENTED in ENGLAND from 1617 to 1854 inclusive, arranged under the greatest number of heads, with parallel references to INVENTIONS and DISCOVERIES described in the scientific works of VARIOUS NATIONS, as classified by Professor Schubarth. By B. WOODCROFT, F.R.S. Price 1*s.* By Post, 1*s.* 1*d.*

   The foreign works thus indexed form a portion of the Library of the Commissioners of Patents, where they may be consulted.

4. EXTENSION of PATENTS to the COLONIES.—Abstract of Replies to the Secretary of State's Circular Despatch of January 2, 1853, on the subject of the Extension of Patents for Inventions to the Colonies. Second Edition, with Revised Table. 1861. Price 2*s.* By Post, 2*s.* 2*d.*

5. SUPPLEMENT to the SERIES of LETTERS PATENT and SPECIFICATIONS, from A.D. 1617 to Oct. 1852; consisting for the most part of Reprints of scarce Pamphlets, descriptive of the early patented Inventions comprised in that Series.

CONTENTS.

1. Metallica; or the Treatise of Metallica, briefly comprehending the doctrine of diverse new metallical inventions, &c. By SIMON STURTEVANT. (*Letters Patent, dated* 29*th February* 1611.) Price 1*s.* 4*d.*; by post, 1*s.* 5*d.*
2. A Treatise of Metallica, but not that which was published by Mr. Simon Sturtevant, upon his Patent, &c. By JOHN ROVENZON. (*Letters Patent granted A.D.* 1612.) Price 4*d*; by post, 4½*d.*
3. A Commission directed to Sir Richard Wynne and others to inquire upon oath whether NICHOLAS PAGE or Sir NICHOLAS HALSE was the first inventor of certaine kilnes for the drying of malt, &c. &c. (*Letters Patent, Nos.* 33 *and* 85, *respectively dated* 8*th April* 1626, *and* 23*rd July* 1635.) Price 2*d.*; by post, 2½*d.*
4. DUD DUDLEY's Metallum Martis; or iron made with pit-coale, sea-coale, &c. (*Letters Patent, Nos.* 18 *and* 117, *respectively dated* 22*nd February* 1620, *and* 2*nd May* 1638.) Price 8*d.*; by post, 9*d.*
5. Description of the nature and working of the Patent Waterscoop Wheels invented by WILLIAM WHELER, as compared with the raising wheels now in common use. By J. W. B. Translated from the Dutch by Dr. Tolhausen. (*Letters Patent, No.* 127, *dated* 24*th June* 1642.) Price 2*s.*; by post, 2*s.* 1½*d.*
6. An exact and true definition of the stupendous Water-commanding Engine invented by the Right Honourable (and deservedly to be praised and admired) EDWARD SOMERSET, Lord Marquis of WORCESTER, &c. &c. (*Stat.* 15 *Car. II. c.* 12. *A.D.* 1663.) Price 4*d.*; by post, 4½*d.*
7. Navigation improved; or the art of rowing ships of all rates in calms with a more easy, swift, and steady motion than oars can. By THOMAS SAVERY. (*Letters Patent, No.* 347, *dated* 10*th January* 1696.) Price 1*s.*; by post, 1*s.* ½*d.*
8. The Miner's Friend; or an engine to raise water by fire, described, &c By THOMAS SAVERY. (*Letters Patent, No.* 356, *dated* 25*th July* 1698, *and Stat.* 10 *&* 11 *Will. III. c.* 31, *A.D.* 1699.) Price 1*s.*; by post, 1*s.* 1*d.*
9. Specimina Ichnographica; or a brief narrative of several new inventions and experiments, particularly the navigating a ship in a calm, &c. By JOHN ALLEN, M.D. (*Letters Patent, No.* 513, *dated* 7*th August* 1729.) Price 8*d.*; *by post*, 8½*d.*

10. A description and draught of a new-invented Macnine for carrying vessels or ships out of or into any harbour, port, or river against wind and tide, or in a calm, &c. By **JONATHAN HULLS.** (*Letters Patent, No.* 556, *dated* 21*st December* 1736.) Price 8*d.*; by post, 9*d.*

11. An historical account of a new method for extracting the foul air out of ships, &c., with the description and draught of the machines by which it is performed, &c. By **SAMUEL SUTTON**, the Inventor. To which are annexed two relations given thereof to the Royal Society by Dr. Mead and Mr. Watson. (*Letters Patent, No.* 602, *dated* 16*th March* 1744.) Price 1*s.*; by post, 1*s.* 1*d.*

12. The letter of Master **WILLIAM DRUMMOND** for the construction of machines, weapons, and engines of war for attack or defence by land or sea, &c, Dated the 29th Septemper 1626. (*Scotch Patent, temp. Car. II.*) Price 4*d.*

A FREE LIBRARY and READING ROOMS are open to the Public daily, from 10 till 4 o'clock, in the Office of the Commissioners of Patents, 25, Southampton Buildings, Chancery Lane. In addition to the printed Specifications, Indexes, and other publications of the Commissioners, the Library includes a Collection of the leading British and Foreign Scientific Journals, and text-books in the various departments of science and art.

Complete sets of the Commissioners of Patents' publications (each set including more than 2,700 volumes and costing for printing and paper nearly £2,600) have been presented to the authorities of the most important towns in the kingdom, on condition that the works shall be rendered daily accessible to the public, for reference or for copying, free of all charge. The following list gives the names of the towns, and shows the place of deposit, so far as ascertained, of each set of the works thus presented :—

Aberdeen (*Mechanics' Institution*).
Belfast (*Queen's College*).
Beverley (*Guildhall*).
Birmingham (*Central Free Library—Reference Department, Ratcliff Place*).
Blackburn (*Free Library and Museum, Town Hall Street*).
Bolton-le-Moors (*Public Library, Exchange Buildings*).
Bradford, Yorkshire (*Borough Accountant's Office, Corporation Buildings, Swain Street*).
Brighton (*Town Hall*).
Bristol (*City Library, King Street*).
Burnley (*Office of the Burnley Improvement Commissioners*).
Bury.
Carlisle (*Public Free Library, Police Office*).
Chester (*Town Hall, Northgate St.*)
Cork (*Royal Cork Instn, Nelson Place*).
Crewe (*Railway Station*).
Darlington (*Mechanics' Institute, Skinnergate*).
Derby (*Free Public Library*).
Dorchester.
Drogheda.
Dublin (*Royal Dublin Soy, Kildare St.*)
Dundalk (*Free Library*).
Falmouth (*Public Liby, Church St.*)
Gateshead (*Mechanics' Institute*).
Gorton (*Railway Station*).
Glasgow (*Stirling's Liby, Miller St.*)
Grimsby, Great (*Mechanics' Institution, Victoria Street*).
Halifax.
Hanley, Staffordshire Potteries (*Town Hall*).
Hertford (*Free Public Library, Town Hall*).
Huddersfield (*Improvement Commissioners' Offices, South Parade*).
Hull (*Mechanics' Inst., George St.*)
Ipswich (*Museum Library, Museum Street*).
Keighley (*Mechanics' Inst., North St.*)
Kidderminster (*Public Free Library, Public Buildings, Vicar Street*).
King's Lynn, Norfolk (*Stanley Library, Athenæum*).
Lancaster (*Mechanics' Institute, Market Street*).
Leamington Priors (*Public Library, Town Hall*).
Leeds (*Public Library, Infirmary Buildings*).
Leicester (*Free Library, Wellington Street*).

Limerick (*Town Hall*).
Liverpool (*Free Public Library, William Brown Street*).
London (*British Museum*).
——— (*Society of Arts, John Street, Adelphi*).
Macclesfield (*Useful Knowledge Society*).
Maidstone (*Free Library*)
Manchester (*Free Liby, Camp Field*).
Montrose (*Free Library*).
Newark, (*Mechanics' Institute, Middle Gate*).
Newcastle-upon-Tyne (*Literary and Philosophical Society*).
Newport, Monmouth (*Commercial Room, Town Hall*).
Northampton.
Norwich (*Free Library, St. John's, Maddermarket*).
Nottingham (*Free Library*).
Oldham (*School of Arts and Sciences, Lyceum*).
Oxford (*Public Free Library Town Hall*).
Paisley (*Government School of Design, Gilmour Street*).
Plymouth (*Mechanics' Institute, Princess Square*).
Preston, Lancashire (*Dr. Shepherd's Library, the Institution, Avenham*).
Reading (*Literary, Scientific, and Mechanics' Institution, London St.*)
Rochdale (*Commissioners' Rooms, Smith Street*).
Rotherham (*Board of Health Offices, Howard Street*).
Salford (*Royal Museum and Library, Peel Park*).
Sheffield (*Free Public Library, Surrey Street*).
Shrewsbury (*Public Museum, College Street*).
Southampton (*Hartley Institution*).
Stirling (*Burgh Library, Town House, Broad Street*).
Stockport (*Museum, Vernon Park*).
Sunderland (*Corporation Museum Athenæum, Fawcett Street*).
Wakefield (*Mechanics' Institution, Barstow Square*).
Warrington (*The Museum and Library*).
Waterford (*Town Hall, The Mall*).
Wexford (*Mechanics' Institute, Crescent Quay*).
Wigan.
Wolverhampton (*School of Practical Art, Darlington Street*).
Wolverton (*Railway Station*).
York (*Lower Council Chamber, Guildhall*).

The Commissioners' publications have also been presented to the following Public Offices, Seats of Learning, Societies, British Colonies, and Foreign States :—

Public Offices, &c.

Admiralty—Director of Works' Department.
  Chief Constructor's Department.
  Chatham Dockyard.
  Sheerness ditto.
  Portsmouth ditto.
  Devonport ditto.
  Pembroke ditto.
Artillery Institute, Woolwich.
Board of Trade, Whitehall.
Ordnance Office—Pall Mall.
  Small Arms Factory Enfield.
War Office, Pall Mall.
India Office.
Royal School of Mines, &c., Jermyn Street, Piccadilly.
Dublin Castle, Dublin.
Record and Writ Office, Chancery, Dublin.
Office of Chancery, Edinburgh.

Seats of Learning and Societies.

Cambridge University.
Trinity College, Dublin.
Queen's College, Galway.
Incorporated Law Society, Chancery Lane, London.

British Colonies.

Antigua.
Barbados.
British Guiana.
Canada—Library of Parliament, Ottawa.
  Bureau of Agriculture, Toronto.
  Board of Arts and Manufactures, Montreal.
Cape of Good Hope.
Ceylon.
India—Bengal.
  Bombay.
  Madras.
  N.-W. Provinces.
Jamaica.
Malta.
Mauritius.
New Brunswick.
Newfoundland.
New South Wales.
New Zealand.
Nova Scotia.
Prince Edward Island.
South Australia—Colonial Institute, Adelaide.
Tasmania.
Trinidad.
Victoria—Parliamentary Library, Melbourne.
  Patent Office, Melbourne.
  Public Library Melbourne.

Foreign States.

Argentine Republic—Buenos Ayres.
Austria—Handels Ministerium, Vienna.
Belgium—Ministère de l'Intérieur, Brussels.
Musée de l'Industrie, Brussels.
France—Bibliothèque Nationale,
Conservatoire des Arts et Métiers, } Paris.
Hôtel de Ville,
Germany—Alsace—Société Industrielle, Mulhouse.
Bavaria—Königliche Bibliothek, Munich
Gotha—Ducal Friedenstein Collection.
Prussia—Gewerbe-Akademie, Berlin.
Königliche Bibliothek, Berlin.
Königliche Polytechnische Schule, Hanover.
Saxony—Polytechnische Schule, Dresden.
Wurtemberg—Bibliothek des Musterlagers, Stuttgart.
Italy—Ufficio delle Privative, Florence.
Netherlands—Harlem.
Russia—Bibliothèque Impériale, St. Petersburg.
Spain—Madrid.
Sweden—Teknologiska Institutet, Stockholm.
United States—Patent Office, Washington.
Astor Library, New York.
State Library, Albany.
Franklin Institute, Philadelphia.
Free Library, Boston.
Library Company, Philadelphia.
Library Association, Chicago.
Peabody Institute, Baltimore.
Historical Society, Madison, Wisconsin.
Cornell University, Ithaca, N.Y.
Mercantile Library, St. Louis.

Grants of complete series of Abridgments of Specifications have been made to the undermentioned Mechanics' Literary and Scientific Institutions:—

Aberystwith (*Literary and Working Men's Reading Room*).
Alnwick (*Scientific and Mechanical Institution*).
Altrincham (*Altrincham and Bowdon Literary Institution*).
Ashby-de-la-Zouch (*Mutual Improvement Society*).
Bacup (*Mechanics' Institution*).
Ballymoney (*Town Hall*).
Banbridge (*Literary and Mutual Improvement Society*).
Banbury (*Mechanics' Institution*).
Barnstaple (*Literary and Scientific Institution*).
Bath (*Athenæum*).
Batley (*Mechanics' Institution*).
Battle (*Young Men's Christian Association*).
Belfast (*Athenæum*).
Berkhampstead, Great (*Working Men's College*).
Birmingham (*Birmingham Heath and Smethwick Working Men's Club and Institute*).
——— (*Bloomsbury Institution*).
——— (*Central Lending Library*)
——— (*Deritend Working Men's Association*).
——— (*Graham Street Institution*).
Bodmin (*Literary Institution*).
Bolton (*Mechanics' Institute*).
——— (*School of Art*).
Bradford, near Manchester (*Bradford Working Men's Club*).
———, Yorkshire (*Library and Literary Society*).
——— ——— (*Mechanics' Institute*).
Brampton, near Chesterfield (*Local Museum and Literary Institute*).
Breage, Cornwall (*Breage Institution*).
Bristol (*Athenæum*).
——— (*Institution*).
——— (*Law Library Society*).
——— (*Library*).
Bromsgrove (*Literary and Mechanics' Institute*).
Burnley (*Mechanics' Institution*).
——— (*Literary Institution*).
Burslem (*Wedgwood Institute*).
Bury St. Edmund's (*Mechanics' Institution*).
Canterbury (*Working Men's Club*).
Cardiff (*Free Library and Museum*).
Cardigan (*Mechanics' Institute*).
Carharrack (*Literary Institute*).
Carmarthen (*Literary and Scientific Institution*).
Cheltenham (*Literary and Philosophical Society*).

Cheltenham (*Permanent Library*).
——— (*Working Men's Club*).
Chertsey (*Literary and Scientific Institution*).
Chester (*City Library and Reading Room*).
Chesterfield (*Mechanics' Institution*).
Chichester (*Literary and Philosophical Society*).
——— (*Literary Society and Mechanics' Institute*).
Coalbrookdale (*Literary and Scientific Institution*).
Cockermouth (*Mechanics' Institution*).
Colchester (*Literary Institution*).
——— (*Young Men's Christian Association*).
Compstall (*Athenæum*).
Coventry (*Free Library*).
——— (*Institute*).
——— (*School of Art*).
Crediton (*Working Men's Club*).
Dartmouth (*Mutual Improvement Society*).
Deal (*Deal and Walmer Institute*).
Denton (*Denton and Haughton Mechanics' Institution*).
Derby (*Mechanics' Institution*).
Devonport (*Mechanics' Institute*).
Dewsbury (*Mechanics' Institution*).
Doncaster (*Free Library*).
——— (*Great Northern Mechanics' Institute*).
Dorchester (*County Museum and Library*).
——— (*Working Men's Institute*).
Dudley (*Mechanics' Institution*).
Dukinfield (*Mechanics' Institute*).
——— (*Village Library and Reading Room*).
Dumbarton (*Philosophical and Literary Society*).
Dumfries (*Mechanics' Institution*).
Durham (*Mechanics' Institute*).
Eagley, Bolton-le-Moors (*Library and Institute*).
Earlestown, Newton-le-Willows (*Mutual Improvement Society*).
Edinburgh (*Horological Society*).
——— (*Mechanics' Library*).
——— (*Philosophical Institution*).
——— (*Royal Society of Arts*).
——— (*Royal Scottish Society of Arts*).
——— (*Subscription Library*).
——— (*Watt Institution and School of Art*).
——— (*Working Men's Club*).
Egham (*Literary Institute*).
Egremont (*Mechanics' Institution*).
Exeter (*Devon and Exeter Institution*).
Faversham (*Institute*).
Frome (*Literary and Scientific Institution*).
Gainsborough (*Literary, Scientific and Mechanics' Institute*).
Garforth, near Leeds (*Working Men's Club*).
Glasgow (*Athenæum*).
——— (*Central Working Men's Club and Institute*).
——— (*Institution of Engineers in Scotland*).
——— (*Mechanics' Institution, Bath Street*).
——— (*Philosophical Society*).
Grantham (*Public Literary Institution*).
Gravesend (*Gravesend and Milton Library and Reading Rooms*).
Greenwich (*Working Men's Institute*).
Guernsey (*Mechanics' Institution and Literary Society*).
——— (*Working Men's Association*).
Guildford (*Mechanics' Institute*).
Halesworth (*Mechanics' Institute*).
Halifax (*Literary and Philosophical Society*).
——— (*Mechanics' Institute*).
——— (*Working Men's College*).
Haslingdon (*Institute*).
Hastings (*Literary and Scientific Institute*).
Hawarden (*Literary Institution*).
Hebden Bridge, near Todmorden (*Mechanics' Institution*).
Helston (*Reading Room and Library*).
Hereford (*Natural History, Philosophical, Antiquarian, and Literary Society*).
Hertford (*Literary and Scientific Institution*).
Heywood (*Mechanics' Institute*).
Holbeck (*Mechanics' Institution*).
Hollingwood (*Working Men's Club*).
Holywell Green (*Mechanics' Institution*).
Huddersfield (*Mechanics' Institution*).
Hull (*Church Institute*).
—— (*Literary. Scientific and Mechanics' Institute*).
—— (*Lyceum Library*).
—— (*Royal Institution, Albion Street*).
—— (*Young People's Institute*).
Huntingdon (*Literary and Scientific Institution*).
Kendal (*Christian and Literary Institute*).
——— (*Working Men's Institute*).
Kidderminster (*Mechanics' Institute*).
Lancaster (*Mechanics' Institute and School of Science*).
Leeds (*Church Institute*).
——— (*Library*).
——— (*Mechanics' Institution and Literary Society*).
——— (*Philosophical and Literary Society*).
——— (*Working Men's Institute*).
——— (*Young Men's Christian Association*).
Leighton Buzzard (*Working Men's Mutual Improvement Society*).
Leith (*Mechanics' Subscription Library*).
Lewes (*Mechanics' Institute*).
——— (*School of Science and Art*).
Lincoln (*Mechanics' Institute*).

Liverpool (*Institute*).

——— (*Mechanics' Institute*).

——— (*Medical Institution*).

——— (*Polytechnic Society*).

Llanelly (*Chamber of Commerce and Reading Room*).

London (*Athenæum Club, Pall Mall*).

——— (*Beaumont Institute, Mile End*).

——— (*Bedford Working Men's Institute, Spitalfields*).

——— (*Birkbeck Institution, Southampton Buildings, Chancery Lane*).

——— (*Bow Common Working Men's Club, Devon's Road, Bow Common*).

——— (*Christchurch Working Men's Club, New Street, Lark Hall Lane, Clapham*).

——— (*Clerkenwell Club, Lower Rosoman Street*).

——— (*Holloway Working Men's Club and Institute, Holloway Road*).

——— (*Literary and Scientific Society, Wellington Street, Islington*).

——— (*Literary and Scientific Institution, Walworth*).

——— (*St. James and Soho Working Men's Club, Rupert Street, Soho*).

——— (*St. Mary Charterhouse Working Men's Club, Golden Lane*).

——— (*South London Working Men's College, Blackfriars Road*).

——— (*Southwark Working Men's Club, Broadwall, Stamford Street*).

——— (*Spring Vale Institution, Hammersmith*).

——— (*Working Men's Club, Brixton Hill*).

——— (*Working Men's Club, St. Mark's, Victoria Docks*).

——— (*Working Men's Club and Institute, Battersea*).

——— (*Working Men's Club and Institute Union, Strand*).

——— (*Working Men's College, Great Ormond Street*).

Loughborough (*Working Men's Club and Institute*).

Madeley (*Anstice Memorial, Workmen's Club and Institute*).

Manchester (*Ancoats Branch Free Library*).

——— (*Athenæum*).

——— (*Campfield Free Lending Library*).

——— (*Chorlton and Ardwick Branch Free Library*).

——— (*Hulme Branch Free Library*).

——— (*Law Library*).

——— (*Mechanics' Institution*).

——— (*Natural History Museum, Peter Street*).

——— (*Owen's College*).

——— (*Portico Library, Mosley Street*).

——— (*Rochdale Road Branch Free Library*).

——— (*Royal Exchange Library*).

Mansfield (*Co-operative Industrial Society*).

——— (*Mechanics', Artizans', and Apprentices' Library*).

Melksham (*Mutual Improvement Society*).

Merthyr-Tydfil (*South Wales Institute of Engineers*).

Middlesborough (*Iron and Steel Institute*).

——— (*Mechanics' Institution*).

Modbury (*Mechanics' Institution*).

Mossley (*Mechanics' Institute*).

Newark (*Mechanics' Institute*).

Newcastle-upon-Tyne (*Mechanics' Institution*).

——— (*Working Men's Club*).

New Mills, near Stockport (*Mechanics' Institute*).

Newport, Isle of Wight (*Young Men's Society and Reading Room*).

Northampton (*Mechanics' Institute*).

Nottingham (*Free Library*).

——— (*Mechanics' Institution*).

——— (*Subscription Library, Bromley House*).

Oldham (*Analytic Literary Institution*).

——— (*Mechanics' Institution, Werneth*).

Ormskirk (*Public Library*).

Oswestry (*Institute*).

Patricroft (*Mechanics' Institution*).

Pembroke Dock (*Mechanics' Institute*).

Pendleton (*Mechanics' Institution*).

Penryn (*Working Men's Club and Reading Room*).

Perth (*Mechanics' Library, High Street*).

Peterborough (*Mechanics' Institution*).

Plymouth (*Working Men's Institute*).

Poole (*Literary and Scientific Institution*).

——— (*Mechanics' Institute*).

Portsea (*Athenæum and Mechanics' Institution*).

Preston (*Avenham Institution*).

——— (*Society of Useful Knowledge*).

Rawtenstall (*Mechanics' Institution*).

Richmond (*Working Men's College*).

Rotherham (*Rotherham and Masbro' Literary and Mechanics' Institute*).

Royston (*Institute*).

Ryde, Isle of Wight (*Philosophical and Scientific Society*).

Saffron Walden (*Literary and Scientific Institution*).

St. Just (*Institution*).

St. Leonard's (*Mechanics' Institution*).

Salford (*Working Men's Club*).

Saltaire (*Literary Institute*).

Selby (*Mechanics' Institute*).

Sheffield (*Branch Free Library*).

——— (*Literary and Philosophical Society, School of Arts*).

Skipton, Yorkshire (*Mechanics' Institute*).